NETWORK WORLD

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SPECIAL SECTION

Software solutions still eluding users

The term "communications software" encompasses a vast spectrum of products, from asynchronous dial-up file-transfer packages and electronic mail systems to protocol converters and high-level internetwork gateways.

Even seasoned communications managers may encounter hidden obstacles as they dig through today's avalanche of software to find products that address specific networking applications. In addition, they're learning it's no longer sufficient just to make wise choices when selecting individual pieces of communications software. It's also necessary to determine how those pieces will fit into the network management puzzle.

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▶ *REGULATION*

FCC proposes private net access charges

Seeks fee for calls dumped into local exchange.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — The Federal Communications Commission last week proposed a plan under which private network users would pay access charges for off-network telephone calls that terminate over the local switched network.

The FCC suggested a rewrite of its current policies governing access charges for private networks, raising the question of whether private net users are paying their fair share for local exchange use. Under the agency's proposal, private network users would be charged $4.50 per hour in access fees.

The plan is similar to an FCC proposal issued in July under which enhanced service providers would have to pay the same type of access charges that long-distance carriers pay local telephone companies. That plan has met with thunderous opposition from users and vendors. The user access charge plan, which sources said could raise $170 million annually, is also likely to elicit widespread discontent.

At a press briefing following the announcement of the private network access fee, the FCC said it would postpone implementation of the enhanced service access charge plan. The plan was scheduled to take effect Jan. 1.

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▶ *INFORMATION SERVICES*

NTIA prods FCC to challenge Greene

Commerce unit sows discord.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — A division of the U.S. Department of Commerce last week urged the FCC to challenge U.S. District Court Judge Harold Greene's recent decision to continue prohibiting the regional Bell holding companies from offering information services.

A letter issued to the Federal Communications Commission by the Commerce Department's National Telecommunications and Information Administration (NTIA) said Greene had exceeded his authority in limiting the RBHCs and that jurisdiction over information services should be left to the FCC.

The Communications Act of 1934 empowers the FCC to

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▶ *NETWORK INVESTMENTS*

Study offers insights into true costs of net ownership

Corporate network cost breakdown

	Acquisition	Five-year operation *	Total percentage of cost by category
Equipment	25.7%	8.9%	34.6%
Software	2.6%	10.8%	13.4%
Personnel	NA	29.3%	29.3%
Carrier services	0.3%	14.7%	15.0%
Wiring	6.5%	1.2%	7.7%
Totals	35.1%	64.9%	100.0%

* Includes incremental network changes.
NA = Not applicable
Network costs do not include terminals or computers, except for network processing. Personnel costs include only dedicated network staff.
SOURCE: INDEX GROUP, INC., CAMBRIDGE, MASS.

BY MARY LINEHAN
Staff Writer

CAMBRIDGE, Mass. — The cost of network equipment, frequently a major factor in acquisition decisions, actually accounts for less than 25% of total network ownership costs and does not reflect long-term network expenses, according to a study released here last week.

The study, "The Costs of Network Ownership," was funded by Digital Equipment Corp. and conducted by

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NETWORK LINE

News

▶ Carl's Jr. fast-food restaurant chain launches a debit-card network trial involving 31 California locations, in an effort to attract new customers and increase sales. Page 2.

▶ Major corporate users of electronic data interchange, some of whose systems date back to the 1970s, hope to increase use of the networking technology by implementing the recently completed ANSI X.12 standard. Page 2.

▶ Regardless of what vendors say, Ethernet and the IEEE 802.3 standard are not the same, and users who try to implement and troubleshoot the two sometimes become painfully aware of their incompatibilities. Page 6.

Features

▶ To users, transparent local-area network links should be nothing magical; to vendors, they're a tough act to get working. The black art of internetworking is examined in this *Network World* Special Section on communications software. Page 28.

NEWSPAPER

▶ *NETWORK OVERHAUL*

AT&T agrees to upgrade EPSCS

BY BOB WALLACE
Senior Editor

BASKING RIDGE, N.J. — Bowing to pressure from its largest customers, AT&T will soon begin replacing its 17-node, nationwide Enhanced Private Switched Communications Service (EPSCS) network with a fully digital system, *Network World* has learned.

The effort, which AT&T said is one of the largest customer network projects it has ever undertaken, is expected to be completed in the spring of 1989. It will involve the replacement of all analog AT&T 1ESS EPSCS service nodes with 5ESS digital central office switches and the

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▶ *POINT-OF-SALE*

Fast-food chain lures debit-card customers

Carl's Jr. builds 31-store POS network.

BY JOSH GONZE
Staff Writer

SAN DIEGO — Taking debit card technology into the realm of fast food, the Carl's Jr. restaurant chain has installed point-of-sale terminals in 31 restaurants here in an experiment designed to pull in new customers and increase the amount they spend.

The POS terminals enable customers to pay for food using their bank-issued automatic teller machine cards and to withdraw up to $20 in cash from their bank accounts. The total of the purchase and cash withdrawn is debited from the customer's bank account and deposited in a Carl's Jr. account.

"We're opening the fast-food doors to the credit-paying public for the first time," said Robert Altman, vice-president of MIS at Carl Karcher Enterprises, Inc., the holding company that owns the Carl's Jr. chain.

According to the plan, the network eventually will serve as the payment method for about 10% of Carl's Jr.'s income and will increase the average purchase by 30% to 40%. Each restaurant is expected to generate between 700 and 1,000 transactions per month.

Altman declined to estimate how much the company is investing in the experiment.

10-second transactions

In the trial here, and in another kicked off recently in Sacramento, Calif., transactions are routed, processed and completed in less than 10 seconds, while the customer is still at the counter.

"We are a fast-food restaurant, and we are competing against cash. If you slow down the speed of service, you lose customers. So we definitely need between eight- and 10-second response times," Altman said.

The Anaheim, Calif.-based Carl Karcher Enterprises began the San Diego trial in July after observing the successful implementation of a debit-card payment system at Lucky Stores, Inc., a California supermarket chain ("Debit card users make Lucky happy," *NW*, Feb. 9).

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▶ *ELECTRONIC DATA INTERCHANGE*

EDI users anticipate X.12 boost

ANSI standard expected to yield bounty of applications.

BY JOSH GONZE
Staff Writer

Major corporations that have used electronic data interchange (EDI) to handle basic business transactions since the mid-1970s are hoping to milk even more benefits from the networking technology by implementing the ANSI X.12 standard.

EDI networks, which link users to suppliers and customers, handle the computer-to-computer exchange of standard business information such as purchase orders, invoices and bills. Recently, EDI applications have widened to include electronic filing of insurance claims and tax returns.

Users across a spectrum of industries, from pharmaceuticals to oil drilling, said EDI has helped them cut inventory, speed product delivery and slash administrative overhead costs.

Currently, most EDI network operators use proprietary and often industry-specific formats for business documents. Trade associations, such as the National Wholesale Druggist Association, have EDI formats for their own vertical markets.

But ANSI has drafted a set of standardized formats for EDI transactions, dubbed ANSI X.12, that will allow users in a variety of industries to share information more easily. It is hoped that adoption of the X.12 standard will spur wider use of EDI networks.

EDI networks received an additional boost with the creation of an international EDI users group at an ANSI X.12 Committee meeting in San Francisco two weeks ago. The purpose of the cross-industry group is to represent the interests of large corporations operating international EDI networks, according to Victor Wheatman, an attendee at the meeting and manager of EDI planning services at Input, a management consulting firm based in Mountain View, Calif.

Many long-time EDI users plan to replace proprietary EDI formats with the recently completed ANSI X.12 standard. They said EDI applications are ripe for standardization because users generally share basic elements of conducting trade such as inventory, ordering, billing and payment.

Navistar International Corp., a manufacturer of diesel engines and trucks, is currently in the midst of converting its EDI applications to X.12 from the proprietary formats it has used since the mid-1970s. Gerald Bielfeldt, manager of financial systems at Navistar, said he expects 90% of the company's suppliers will convert to the new format by the end of the year.

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NEW PRODUCTS AND SERVICES

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▶ *FEDERAL NETWORK*

Sprint, EDS rebid on FTS 2000

Firms encouraged by revised RFP.

BY JOSH GONZE
Staff Writer

WASHINGTON, D.C. — In the wake of the U.S. General Services Administration's decision to split the $4.5 billion Federal Telecommunication System (FTS) contract between two bidders, US Sprint Communications Co. and Electronic Data Systems Corp. (EDS) said they may reenter the contract competition.

The companies will form a joint venture to compete for a piece of the mammoth FTS 2000 contract if the final request for proposal is issued along the lines the firms envision, sources at the companies said. The revised RFP reportedly will call for the contract to be divided on a 60%-40% basis.

US Sprint and EDS teamed up last year to bid for the pact but ended their participation later in the year, citing RFP changes.

"We will make a final decision once we see the final RFP," said Christopher E. Clouser, senior vice-president for corporate relations and administration at US Sprint. "In the meantime, we have reached an agreement with EDS that, if the RFP is as we believe it will be, we will form a partnership. EDS and US Sprint view it as a major opportunity for both companies," he said.

The contract winners will design, build and maintain a national voice, data and video network for the federal government. The GSA is handling the RFP and accepting contract bids.

US Sprint and EDS teamed up last year to bid jointly for the pact

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Network World wants to make its news coverage even better, and for that we ask your help. If you know of an interesting event that just occurred or is about to occur, please call. We'd also like to know how you optimize your networks. Call Editor Bruce Hoard toll free at (800) 343-6474.

Correction: A chart in our Nov. 16 issue incorrectly listed the number of ports supported by Data Switch Corp.'s Galaxy matrix switch. The Galaxy Plus works with up to 4,096 ports.

TIMEPLEX/UNISYS:

RESHAPING THE FUTURE OF COMMUNICATIONS NETWORKING

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- Designing integrated systems solutions for integrated network management and control **WILL NOT CHANGE.** Multi-vendor systems are a reality and connectivity is key.
- Supporting current and evolving standards through: open interfaces to TIME/VIEW, our integrated network management system; on-going support of IBM's NetView; participation in standards bodies, and the pursuit of standards such as OSI with other vendors **WILL NOT CHANGE.**
- Developing innovative technology that expands our customers' existing systems by providing a smooth migration path while protecting their present investment **WILL NOT CHANGE.**
- Our Timeplex name, our organization and the Timeplex team that has served our customers for over 18 years **WILL NOT CHANGE.**

WHAT WILL CHANGE, is that we now will enjoy the backing of Unisys, a $10 billion information systems company. This will help us to enhance our market leadership position, and our ability to deliver business communications solutions.

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FCC proposes access charges

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Private networks currently pay "special access charges," which are included in the price of long-distance private-line service.

But, FCC Common Carrier Bureau Chief Gerald Brock argued that private networks that can carry calls long distance and then pass them off-net to local exchange carriers for completion should pay those carriers for local switched access, just as long-distance carriers do. In many cases, users are not paying for switched access, and this is unfair to all other users who do, Brock said.

For example, a private network user in Boston may want to place a call to someone in Chicago who is not on the corporate network. The user's private branch exchange may be able to route the call from Boston to Chicago over dedicated facilities and then have the PBX in Chicago switch it out into the public network.

The local carrier has no way of telling whether the call was local or long distance and consequently has no way of assigning access charges for the call.

In the past, the FCC has required private network owners to report voluntarily to the Bell operating companies if their networks were configured to operate this way. Customers that owned up are required to pay the local exchange carriers $25 per private line per month to help the local telephone company recover the cost for providing local switched access.

Under the FCC's new proposal, private network users would be required to keep track of all their off-network calls and would be assessed a local switched access fee of 7½ cents per minute.

The access fee plan would also apply to users of what the FCC calls Centrex Electronic Tandem Switching services, by which calls are routed between Centrex services over dedicated facilities and dumped into the local exchange.

FCC Chairman Dennis Patrick emphasized that this proposed ruling would not subject all private-line or private-network users to switched access charges. Only private-network users that use the local switched network to terminate their calls would be subject to the charges.

Critics of the plan fear the FCC will not be able to enforce this ruling. "The commission is going to have the same enforcement problems with this new ruling as it has with the existing regulation. It's basically unenforceable," said Kenneth Phillips, who is vice-president of telecommunications policy at Citicorp and chairman of the Committee of Corporate Telecommunications Users.

Further, critics suggest the FCC is using this proceeding as a smoke screen to diffuse criticism of its plan to levy access charges on enhanced service providers.

Opponents of the FCC's access charge plan argued that the commission was unfairly subjecting enhanced service providers to access charges and letting others, such as private network users, off the hook. By charging all users the same type of access fees, the fairness argument is defeated, industry analysts said.

Larry Blosser, an attorney for the International Communications Association, said his group has not formulated an opinion about the proposed order.

"We are waiting for our corporate users to analyze the FCC's proposal to see if it would have a very serious effect on the bottom line cost of service," Blosser said. "We're not opposed to paying our fair share for use of public network facilities. From a legal perspective, it makes sense for the FCC to examine this issue concurrently with the [enhanced service provider] issue."

Industry analyst George Dellinger, of the Washington Analysis Corp., said the reason behind this ruling "is the FCC's desire to have ideological parity for all regulations and all consumers of telephone service. I think the commission will have to weigh its ideological desires against the potential political backlash that will occur."

Study offers insights into costs

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The Index Group, Inc. and Michael Treacy of the Massachusetts Institute of Technology here.

It concluded that companies often evaluate networks using the wrong criteria, primarily because network costs are difficult to track.

"We found that none of the 14 companies we worked with on this study had any idea of its total network cost," Treacy said. "I tend to think that is typical. The responsibility for networks is so distributed that there is no one place where those numbers come together."

In developing and applying the cost model used to conduct the study, the authors found companies that design networks to minimize communications carrier costs may be addressing the wrong issue. Those costs, the study said, typically amount to less than 15% of the total cost of owning a network over a five-year period.

The study analyzes five components of network cost: equipment, software, personnel, communications carrier services and building wiring. These cost components are examined over a five-year life cycle, including the acquisition stage, ongoing operation and incremental changes. Incremental changes are described as additions and reconfigurations required as the network ages.

The networks studied — 17 networks operated by 14 Fortune 500 companies — were classified as one of three types: corporate networks, multiple field office networks and manufacturing site networks.

The report defined corporate networks as having multiple locations, with 1,000 or more geographically dispersed users. Multiple field office networks have multiple sites supported by a dedicated link to a central IBM host and 10 to 1,000 users at each site. Manufacturing site networks have a host computer controlling production and monitoring equipment and 10 to 1,000 workstations.

> "We found that none of the companies we worked with on this study had any idea of its total network cost," MIT's Treacy said. "I tend to think that is typical. The responsibility for networks is so distributed that there is no one place where those numbers come together."

"What we did to validate our model and show its usability was to go out to a number of sites and use the grid we'd created to gather information from them on total cost of net ownership," Treacy said.

Network costs were identified, applied to the model and examined over the five-year life cycle that included projected costs for incremental changes. Treacy stressed that network costs, not entire computer system costs, were analyzed.

The bulk of expenses for corporate networks comes after the acquisition stage, and primarily consists of personnel costs (see chart on page 1). Carrier service costs were 15% of the total network expenditures.

Multiple field office networks are shown to have a cost structure similar to corporate networks, but with higher equipment maintenance costs (18.3%, compared with 8.9% for corporate) and lower communications carrier costs (.8% in acquisition and 5.0% over five-year cycle).

Network costs for manufacturing sites are much higher during the operational phase (78.9%) than during the acquisition stage (21.1%), and personnel costs comprise 50.5% of the total network cost. Communications and facilities costs were low, measuring less than 6% of the total budget when combined.

Treacy suggested that the network ownership cost model would be useful as a tool to present a snapshot of current network ownership costs, to compare network ownership costs within an industry, to track cost trends over time, to compare alternate network topologies and to compare alternative network vendors.

The report offered a case study comparing DEC and IBM network costs and concluded by claiming that personnel costs in "operating and incrementally changing Digital corporate networks are consistently lower in the sites studied," as compared with IBM networks.

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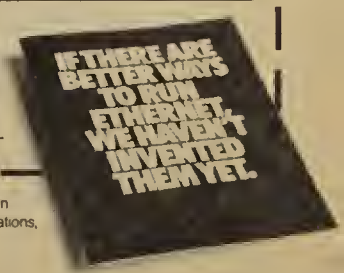
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LOCAL NET STANDARDS

Users beware: Know differences before mixing Ethernet, IEEE 802.3

Despite potential problems, the good news is differences don't prevent use of both technologies on same cable.

BY MARY PETROSKY
West Coast Correspondent

Many vendors tout their local network products as 802.3 Ethernet-compatible, but in reality the IEEE 802.3 standard and Ethernet — a de facto standard supported by many vendors — are not the same and cannot work together.

Although the differences between 802.3 and Ethernet don't prevent users from implementing the two technologies on the same cable — an IEEE 802.3 node will generally ignore Ethernet packets and vice versa — users who mix the technologies should be aware of the differences in order to expedite troubleshooting.

Ethernet was developed at Xerox Corp.'s Palo Alto Research Center in the mid-1970s and backed by Xerox, Digital Equipment Corp. and Intel Corp. The 802.3 standard was approved in June 1983 and published in January 1985.

Both Ethernet and 802.3 gain carrier-sense multiple access using collision detection. But while Ethernet operates at 10M bit/sec and is traditionally associated with coaxial cable, the 802.3 standard supports speeds ranging from 1M bit/sec to 10M bit/sec and accommodates a variety of types of wire.

Problems with having what are essentially two standards can be as simple as incompatibilities between drop cables used to link transceivers to a backbone net, according to William Yundt, director of networking and communications systems at Stanford University in Stanford, Calif.

Using an Ethernet cable with an 802.3 transceiver could introduce noise to a connection and corrupt data, Yundt said.

In addition, different equipment is needed for testing Ethernet and 802.3 transceivers, Yundt said. Routers, which deal with low-level protocols, must also be specific to either Ethernet or 802.3, he said.

More serious problems can arise when an 802.3 or Ethernet node tries to interpret a message intended for the other type of device. Stanford recently ran into this problem when network nodes outfitted with 802.3 tranceivers attempted to interpret packets generated by nodes outfitted with older Ethernet transceivers. The 802.3 nodes became overloaded handling broadcast Ethernet messages, and users' screens froze.

Such problems are usually rare, in part because most vendors use the Ethernet data formatting scheme, according to Harry Saal, president of Network General Corp., a protocol analyzer vendor in Sunnyvale, Calif. However, as vendors and users migrate from Ethernet to 802.3 and increasingly combine the two technologies on the same network, the chances for mix-ups increase, Saal said.

> Problems with having what are essentially two standards can be as simple as incompatibilities between drop cables used to link transceivers to a backbone net, according to William Yundt, director of networking and communications systems at Stanford University.

At the heart of the problem are differences in the way data is formatted within data packets. The packet frames used with 802.3 and Ethernet have both destination and source fields, as well as other similarities and differences. The fields, for example, are ordered differently. Ethernet has a two-byte field called "protocol type," and the 802.3 frame has a two-byte field called "length."

Network vendors have a rule of thumb by which to distinguish Ethernet data packets from 802.3 packets. Numbers used in Etherent's protocol type field are generally higher than those used in the corresponding length field of 802.3 packets. And the 802.3 specification includes a note that packets with a length field greater than a specified value can be discarded or used in a private manner.

"This is a reasonably reliable way to distinguish between the two packet types," said Don Loughry, standards manager for Hewlett-Packard Co.'s Information Networks Group. Loughry is also chairman of the IEEE 802.3 committee.

Network administrators in charge of managing a mixed Ethernet and 802.3 network have tools, primarily protocol analyzers, to monitor the various types of packets being transmitted, both Saal and Loughry said.

"In order to manage the network, system administrators need to understand systematically what value-type fields the Ethernet nodes can generate," Loughry explained.

By monitoring packets — and related type fields — generated by each node, system administrators will be able to see if any nodes are creating protocol type or length fields that are above or below their expected value, Loughry said. In this case, if an anomaly occurs, net managers will have a point at which to begin troubleshooting.

TIMEPLEX

Server to offer ISDN access to T-1 muxes

BY PAUL KORZENIOWSKI
Senior Editor

WOODCLIFF LAKE, Pa. — Timeplex, Inc. announced last week that it is developing a server that will enable its Link family of T-1 multiplexers to operate in an Integrated Service Digital Network environment.

The Prototype D Channel Server will enable Timeplex multiplexers to access ISDN services using the CCITT Primary Rate Interface, which divides a T-1 1.54M bit/sec digital link into 24 64K bit/sec channels.

Of the 24 channels within a Primary Rate Interface, 23 so-called B channels carry either voice or data and the 24th channel, the D channel, transports signaling information used to control the other channels.

Timeplex said the D Channel Server would enable a customer to use ISDN services that provide an alternate route if a link on a private network failed, or it could reroute traffic during busy periods. The server can also act as a gateway and enable both ISDN and non-ISDN premises equipment to utilize ISDN services, according to the company.

The server is being developed by Timeplex engineers. During the first quarter of 1988, the company plans to test the D Channel Server with companies taking part in ISDN field trials. A company spokesman said the product would be ready by the time ISDN services become available.

John Eddon, vice-president of marketing at Timeplex, said ISDN does not represent a threat to vendors making equipment for private networks. Instead, ISDN presents users with a transport and switching alternative for their networks that can incorporate both private network and carrier-provided services.

"ISDN is inevitable, and our focus is to understand how ISDN will help solve the diverse needs of our customers," Eddon said.

Jack Musgrove, industry analyst at Dataquest, Inc., a market research firm in San Jose, Calif., said few companies are currently taking part in ISDN field trials, and consequently few would require a product like the D Channel Server.

He said most T-1 multiplexer suppliers have assured their customers that their products will support ISDN when it becomes widely available.

Timeplex is trying to position itself as the leading T-1 multiplexer supplier of ISDN wares, according to Musgrove.

Even though Timeplex has the largest chunk of the T-1 multiplexer market, the company's product features have been lagging behind offerings from competitors such as Digital Communications Associates, Inc. and Network Equipment Technologies, Inc., according to Musgrove.

By breaking ground in the ISDN market, the company may steal an edge, he said.

The company expects ISDN services to be available in the U.S. in 1989 and in foreign countries such as Canada and England as early as next year.

"Users are making buying decisions today based on vendors' ISDN plans," Eddon said.

Sprint, EDS rebid on FTS 2000

continued from page 2

but later ended their participation. At the time, spokesmen cited ongoing and numerous changes in the RFP and the likelihood of further changes and litigation.

The two companies decided to reenter the competition because the new RFP eliminates the uncertainties and other problems inherent in the old RFP, Clouser said. "Both EDS and US Sprint view the recent changes by the GSA as positive. The fact that they are considering multiple vendors makes for a much more level playing field," he said. "The likelihood for disruption has been minimized, and there will be some predictability in the process."

The other bidders are a team led by AT&T and a consortium including Martin Marietta Corp., MCI Communications Corp. and the regional Bell holding companies.

To handle their joint presentation, US Sprint and EDS will form a review counsel consisting of three representatives from each company, Clouser said.

US Sprint will be responsible for providing network facilities for both voice and data, while EDS will act as systems integrator, he added.

Under strong pressure from Congress, the GSA changed the terms of the contract's RFP on Oct. 30 to allow it to be divided up between two prime vendors.

The new bids will be due March 31 and the contract will be awarded on Sept. 30.

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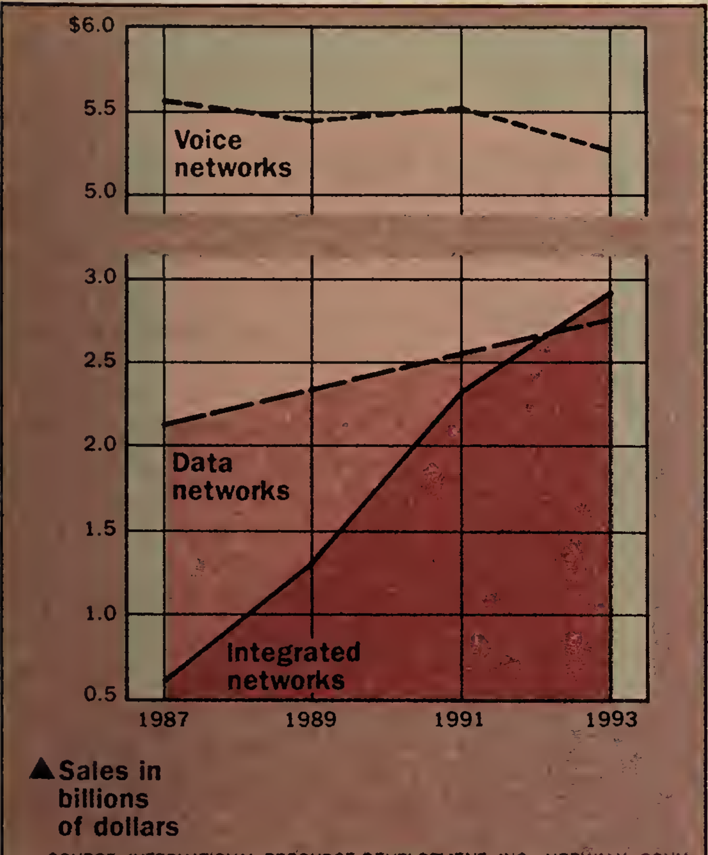
INDUSTRY UPDATE

General DataComm to cut work force 5%

General DataComm Industries, Inc. said it will lay off less than 5% of its work force as part of a restructuring plan aimed at cutting costs. For its fiscal year ended Sept. 30, the company posted a decline in income to $783,000 from $3.9 million in fiscal 1986.

Forecast for private networks



SOURCE: INTERNATIONAL RESOURCE DEVELOPMENT, INC., NORWALK, CONN.

1987 EARNINGS

RBHC holdings to post profits

Bell Atlantic unregulated businesses to net $40m.

BY PAM POWERS
Senior Editor

BOSTON — Bell Atlantic Corp. Chairman and Chief Executive Officer Thomas Bolger told security analysts here last week the company's unregulated businesses would be profitable for the year, contributing more than one-third of 1987 total growth in net income.

The unregulated businesses, all part of Bell Atlantic Enterprises Corp., will achieve a profit of $40 million to $45 million on revenue of $870 million to $875 million for the year, Bolger said. That compares to revenue of $601 million in 1986. Bell Atlantic did not report earnings for unregulated operations last year.

"By 1991, it is not unlikely that 50% or more of our annual revenue could be contributed by unregulated businesses," Bolger said. Bell Atlantic Enterprises includes the regional Bell holding company's holdings in cellular mobile telephone services, customer services such as computer maintenance and financial services such as equipment leasing.

Jim Cullen, president of the Enterprises group, credited the RBHC's success with its practice of acquiring companies that have profitable track records. In a time when the RBHCs are, as a whole, criticized for delving willy-nilly into businesses outside their areas of expertise, Cullen said Bell Atlantic has chosen "carefully" which markets to enter.

Cullen characterized the cellular market, where the RBHC owns Bell Atlantic Mobile Systems, as an "exploding" market. Bell Atlantic

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COMPANY PROFILE

Comten looks to future beyond the IBM arena

Plans multivendor and evolving standards support.

BY PAM POWERS
Senior Editor

ST. PAUL, Minn. — In the wake of its decision to drop two product lines, NCR Comten, Inc. has fallen victim to speculation from analysts who fear for the company's future in the flagging IBM-compatible communications processor market.

But NCR Comten, faced with little growth potential and heavy research and development costs in the communications processor industry, is readying a new plan to expand outside the IBM arena to support multivendor communications and evolving industry standards.

Comten was founded as an independent company in 1968 and merged with NCR Corp. in 1979. Throughout its history, the company has committed most of its resources to the sale of high-end, IBM-compatible front-end processors. NCR Comten now has 2,600 employees and a direct sales force that markets to Fortune 500 customers and the federal government.

As a division of NCR Corp., NCR Comten does not report its own financial results, but analysts estimate the division contributes no more than 5% of NCR's annual revenue, or roughly $245 million. NCR's corporate 1986 revenue was $4.9 billion.

John Rutledge, an analyst with the investment firm of Dillon Reid in New York, said, "Comten isn't growing anywhere near as fast as the company overall has been. Its revenue contribution is hardly material to NCR."

While NCR Comten will not give particulars about its contribution to NCR's bottom line, Eric Birkeland, director of product marketing, said the company still enjoys healthy growth from sales of IBM-compatible communications processors. "We've had over a dozen years of extraordinary growth," Birkeland said.

NCR Comten's communications processors are its primary source of revenue, following the company's recent decision to close shop on its modem and packet-switching product lines.

In September, the company dropped its line of leased and private-line modems and a line of

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INDUSTRY EYE

JACK FREEMAN

T-1 multiplexer market tightens

In the wake of recent acquisitions and vendor alignments, many vendors of high-end T-1 network management multiplexers now have broad voice and data equipment lines, but it will become increasingly harder to win market share against the now-dominant vendors.

Most T-1 multiplexer vendors now offer modems and low-, medium- and high-end multiplexers, X.25 packet assembler/disassemblers, network management equipment and so on. These "full product line" vendors might be considered the major players in the network equipment vendor world.

However, the window of opportunity for leadership or supremacy in the network equipment market may be open for only about 12 to 18 months more, at most. In that time span, the leaders will probably have so consolidated their market shares that entry will be difficult, if not impossible. This will relegate losers to niche markets — to becoming also-rans.

> The only way for the newer network equipment vendor entrants to get market share is to take it from Timeplex and hard-driving NET.

Because this window is so small, the lack of aggressive sales and marketing plans and efforts from many of the would-be participants is surprising. Timeplex, Inc. currently owns the center of this market with a large, trained, motivated sales force.

The only way for the newer network equipment vendor entrants to get market share is to take it from Timeplex and an equally hard-driving Network Equipment Technologies, Inc. (NET). We have not yet seen the fierce, aggressive sales and marketing positioning that is absolutely necessary to win a meaningful share in this arena.

If the network is the computer — and The Yankee Group accepts this thesis — then some of the most furious marketplace action is going to center around who sells that network. The major computer companies want to sell their own networks. IBM has an arrangement with NET, and other computer vendors are actively planning similar ventures. IBM, Digital Equipment Corp., Hewlett-Packard Co. and others want to supply the backbone network whenever they can.

Major network equip-

See page 10

Freeman is a senior analyst with The Yankee Group in Boston.

Comten looks to future beyond the IBM arena

continued from page 9

packet-switching equipment that it resold under an agreement with Telematics, Inc.

While the company's stated reason for exiting those markets was simply that it wished to devote all its resources to its core business of communications processors, sources said NCR Comten couldn't sell the packet gear or the modems effectively, although both were strong product lines.

A puzzling decision

David Passmore, a principal with Network Strategies, Inc. in Fairfax, Va., said he was particularly puzzled by the company's decision to stop selling modems. NCR Comten was the only vendor that made modems compatible with IBM's network problem determination application, which is the inband signaling technique IBM uses for modem diagnostics. All other vendors use secondary channels.

"I don't know why they dropped out of that market," Passmore said. "IBM charges dearly for its modems, so you would think Comten could have taken advantage of that."

Whether there are other reasons for dropping those two product lines remains unclear, but NCR Comten's stated plan to concentrate its resources on its core business seems to be bearing fruit.

The company, Birkeland said, is devising an aggressive expansion plan based on supporting emerging standards and a variety of vendor equipment, in addition to IBM's.

"Our point of emphasis in the future is our role as a general communications processor vendor, supporting a variety of hosts," he explained.

"You can expect to see products from us that allow you to interconnect to ISDN and [Open Systems Interconnect]," Birkeland said. "We are now actively participating with other companies on both developments. Both are important parts of our future direction."

NCR Comten participates in OSInet, and last year it assisted in a large ISDN demonstration with Mountain Bell. "When the product opportunities for OSI and ISDN become marketable, we'll be there with the ability to implement products," he said.

Eric Birkeland, director of product marketing, said the company is devising an aggressive expansion plan based on supporting emerging standards and a variety of vendor equipment, in addition to IBM's.

In a more immediate sense, NCR Comten plans to expand its support of communications to a variety of vendor hosts, in addition to IBM's. Part of that plan involves a software product now under development that enhances NCR Comten's support of X.25.

The new X.25 support will enable the company to offer an X.25 interface that allows intercity Systems Network Architecture and X.25 traffic to travel over the same path. The product gives the appearance of being an X.25 network and can communicate with any product that has an X.25 interface.

Since most hosts can communicate via X.25, the software will facilitate multivendor communications over a single X.25 path, Birkeland said. NCR Comten intends to introduce the software package sometime in 1988.

Passmore applauded the company's move to support X.25 on its SNA boxes, citing a trend to integrate the two capabilities. "It makes sense for Comten, rather than having two separate product lines, to do all [SNA and X.25] switching in the same box."

Slow-growth core

NCR Comten's attempts to expand its market presence into new areas are all-important, given the realities of its core business in the communications processor marketplace. It is a business that NCR Comten admits is beset with heavy costs and slow growth.

While the company's only competitor in the IBM-compatible front-end processor market is Amdahl Corp., its approach to the business is more cost-intensive; Amdahl's plug-compatible front-end processors run IBM operating system software, whereas NCR Comten develops its own.

NCR Comten participates in OSInet, and last year it assisted in a large Integrated Services Digital Network demonstration with Mountain Bell. "When the product opportunities for OSI and ISDN become marketable, we'll be there with the ability to implement products," Birkeland said.

NCR Comten-provided software, according to Passmore, has as many disadvantages as advantages for both NCR Comten and its users.

"Comten has to play catch-up every time IBM comes out with a new version of its software. The advantage for Comten is it generates more revenue in software license fees, but

Comten customers are typically six months to two years behind IBM customers in obtaining the newest version of Network Control Program," Passmore said.

And that constant game of catch-up is a pricey one. Rick Villars, a senior analyst with International Data Corp. in Framingham, Mass., said the IBM-compatible front-end business is not profitable.

"There is so much software research involved in making sure you are plug-compatible with IBM," Villars said.

Villars estimates growth in the communications processor market to be about 7%. He said IBM continues to pick up market share, leaving NCR Comten with sluggish growth prospects.

Birkeland acknowledged that NCR Comten's core business "isn't in the big growth markets we'd like to participate in." As a result, he said, "Comten is going to have to be a little flexible."

Birkeland emphasized that NCR Comten will remain in that business, because it is its bread and butter.

"Competing with IBM altogether is a tough market, but we've been very successful in it," Birkeland said. "We are providing the things the customers are demanding in the IBM environment, and you will see us branching out to connect with multiple vendors in one network."

RBHC holdings to post profits

continued from page 9

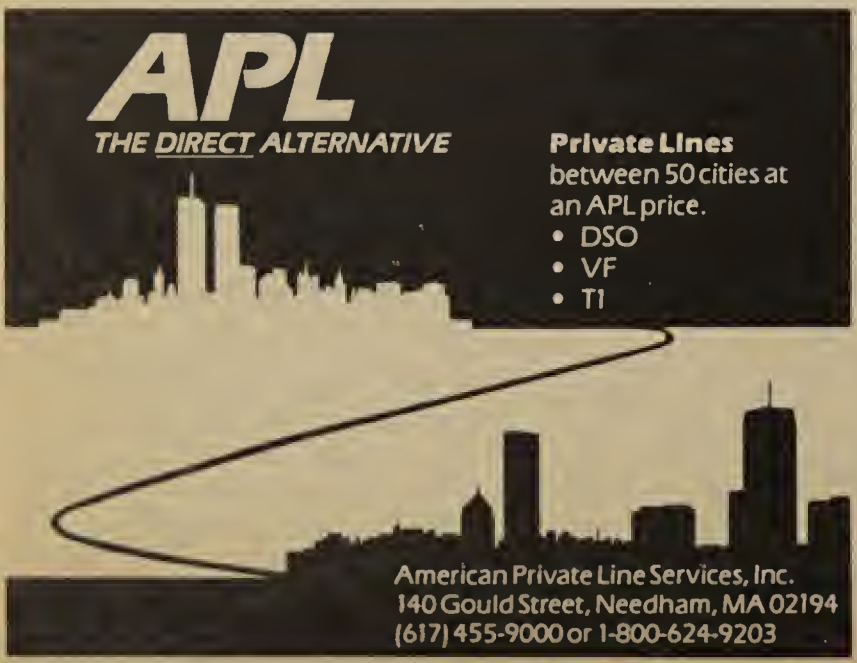
Mobile Systems services customers in the competitive but profitable New York-to-Washington, D.C. corridor. Its customer base grew more than 60% this year compared with last year, Cullen said.

Sorbus, Inc., Bell Atlantic's main computer maintenance business, achieved 25% revenue growth thus far in 1987. The Customer Service Group of Bell Atlantic, which includes MAI Canada, Ltd. and Electronic Service Specialists, Ltd., will grow from $266 million in revenue last year to about $330 million this year, Cullen estimated.

Bell Atlantic Capital Corp., which comprises the RBHC's leasing companies, is expected to grow from $121 million last year to $440 million in 1987.

Bolger said Bell Atlantic's strategy for its unregulated businesses is to expand in those areas where it currently has a market presence. "It is unlikely we would go into businesses other than those we are in already," Bolger said. He said the company will assess new opportunities made possible as U.S. District Court Judge Harold Greene permits further RBHC entry into unregulated businesses.

Bolger said Bell Atlantic's corporatewide restructuring, announced in July, will be completed by Jan. 1, as scheduled.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T-1 mux market tightens

continued from page 9

ment vendors such as Digital Communications Associates/Cohesive Network Corp., NET and Timeplex are also competing for much of that same business.

Local-area network acquisition may be next on the shopping list for the more aggressive network equipment vendors.

But Timeplex has just changed the rules of the network equipment vendor game. The company announced the formation of a joint venture with Comsat General Corp., dubbed SAFECOM Partners, to provide low-cost T-1 satellite transmission for backup, overflow and alternate routing services.

By positioning itself to offer T-1 facilities along with hardware, software, network management — the Time/View network management system will manage both SAFECOM and primary T-1 links — and support services, Timeplex has raised the ante. It now has a potent wild card to play in the backbone network competition game.

Prior to this announcement, only AT&T could provide such a range of offerings. Timeplex has stolen the lead from its competition. Although IBM may have the range of products with its NET marketing arrangement, it is constrained from offering its satellite facilities for resale.

Even if IBM were allowed to separate some of its corporate satellite facilities for resale to customers, or if it entered into a joint marketing arrangement with a carrier such as MCI Communications Corp. or US Sprint Communications Co., such arrangements still could not match SAFECOM's T-1 facilities cost advantage. Only if some other long-distance provider went out of business would those facilities be bought at distress prices low enough to create a SAFECOM competitor.

TELECOM TRENDS

There is life after the World Series

Northwestern Bell announced that 1987 World Series Champion Minnesota Twins will participate in the Bell operating company's first Integrated Services Digital Network field trial. The Minnesota test creates a mini-ISDN net that will initially provide 200 ISDN lines, over three switches, to serve the Twins, Control Data Corp. and Northwestern Bell.

Also, Teleconnect Co., a Cedar Rapids, Iowa-based long-distance service provider, named Whitey Herzog, manager of the National League Champion St. Louis Cardinals, as spokesman. Herzog will help the carrier introduce long-distance service to users in the St. Louis, Mo., metropolitan area.

RFP DEVELOPMENT

UMass team plans for campus network

Multimillion dollar RFP two years in making.

BY BOB WALLACE
Senior Editor

AMHERST, Mass. — Two years of frequent meetings with a consulting firm, selective project staffing and careful building reviews preceded the formulation of the University of Massachusetts' (UMass) network request for proposal.

The UMass contract, valued at $29 million to $42 million, calls for the construction of a three-campus, 31,300-line network to support voice, data and video communications. The project calls for the replacement of switching systems at the school's main campus here and at its Boston and Worcester locations. The network RFP, to which six vendors have responded, was issued in January 1987.

After the vendor bids were received, members of the UMass network project team worked with the bidders to modify their network plans. UMass project staff visited several colleges and universities and a

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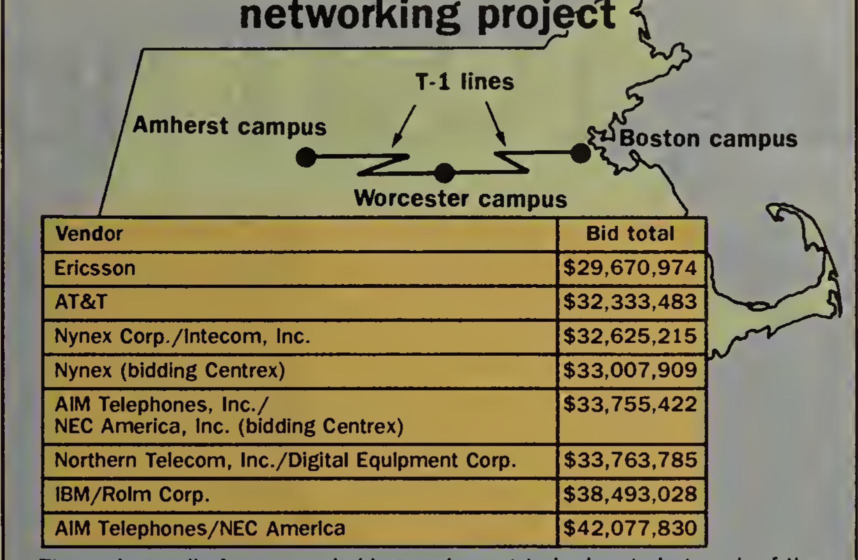
Bids on University of Massachusetts' networking project



Vendor	Bid total
Ericsson	$29,670,974
AT&T	$32,333,483
Nynex Corp./Intecom, Inc.	$32,625,215
Nynex (bidding Centrex)	$33,007,909
AIM Telephones, Inc./ NEC America, Inc. (bidding Centrex)	$33,755,422
Northern Telecom, Inc./Digital Equipment Corp.	$33,763,785
IBM/Rolm Corp.	$38,493,028
AIM Telephones/NEC America	$42,077,830

The project calls for new switching equipment to be located at each of the university's three campuses. They will be connected using T-1 links.
SOURCE: PUBLIC RECORD

VOICE MESSAGING

VMX gear works with Harris PBXs

Pack provides PBX integration.

BY BOB WALLACE
Senior Editor

DALLAS — VMX, Inc., based here, recently announced that its voice-messaging products can be used with Harris Corp.'s 400/1200 line of private branch exchanges.

The switch maker's latest release of feature software, FP-6.1, announced earlier this month, provides PBX integration with the voice-messaging systems. According to VMX, this capability provides users with the following features: personalized call answering, transfer capability and message-waiting indication by means of a stuttered dial tone.

PBX integration with a voice-messaging system results in the lighting of a message-waiting indicator on an end user's telephone set when a message is left for that party. Under the VMX-Harris scheme, however, the end user would have to pick up the telephone handset and listen to the dial tone in order to determine if there were any messages waiting.

The Harris 400/1200 digital PBX line can handle up to 952 trunks.

VMX offers two voice-messaging systems, the VMX 1000, which can support four to 16 ports and offers 64 hours of voice-message storage, and the VMX 5000, which can handle 12 to 64 ports and store 528 hours of voice messages.

CALL-ACCOUNTING SYSTEMS

Mitel, Control Key ink sales accord

BY BOB WALLACE
Senior Editor

HERNDON, Va. — Mitel Datacom, Inc. and Control Key Corp. have entered into an agreement to jointly market call-accounting systems to key telephone system and private branch exchange users. The combination of a Mitel Datacom Call Line Identifier (CLI) and any of three Control Key call-accounting systems can be purchased from either vendor's nationwide dealers and distributors.

The Mitel Datacom CLI system generates station message detail recording (SMDR) data that is passed over an RS-232 link to the Control Key system. The call-accounting system processes the call data to show call length, call origin and which trunk carried the call. The three Control Key call-accounting systems certified to work with the Mitel Datacom CLI cost between $3,000 and $10,000. The PL 75 can handle between 7,500 and 35,500 call records, 60 stations, 40 trunks and 2,000 account codes.

The PL 50 handles between 15,000 and 100,000 call records, 300 stations, 100 trunks and 2,000 account codes. The PL 3000 supports between 30,000 and 115,000 call records, 3,000 stations, 1,000 trunks and 4,000 account codes. The Mitel Datacom CLI system costs less than $1,000 for a four-trunk, 25-line PBX system.

Stuart Card, product management vice-president for Mitel Datacom, said the call-accounting systems will be best received by members of the lodging industry — users likely to be operating telephone systems that do not provide a call-accounting system feature.

CROSS TALK

BOB WALLACE

School goes for strategic edge

Competitive advantage is in the eye of the beholder.

Trade shows, conferences, user seminars and countless keynote speeches have focused on how corporations can acquire a so-called strategic edge by using communications to get ahead of the competition.

But there is nary a mention at these gatherings of how academic institutions can use voice and data networks to pull ahead of their competitors — other colleges and universities.

Martin Smith, assistant vice-president for information management and data processing director for the University of Massachusetts (UMass) in Amherst, Mass., has conceived of a strategic application for the extensive voice and data network the university plans to have operational by the end of 1989 (see related story above).

"We will use this network to help recruit students and faculty," Smith said. "Although the network won't provide us with a competitive advantage in terms of revenue, it can be used to help bring academically gifted students to the university." Smith said prospective UMass students are pressing college recruiters for information on the university's voice and data communications capabilities.

"They want to know if they will be able to use, for example, Macintosh personal computers and microcomputer laboratories to access data bases to get at information they need to help them complete their class work," Smith said.

Currently, some UMass faculty members do not have their own telephones. UMass' universitywide network project calls for every room — classroom, dormitory room or workroom — to be wired with eight pairs of twisted-pair wire.

Smith has also laid plans to reduce students' long-distance calling costs. Instead of relying on New England Telephone & Telegraph Co. to handle inter-local access and transport area long-distance calls and AT&T's long-haul net to carry the rest, an increasing number of student calls will be carried over T-1 lines between the school's three campuses within the state. Smith said these high-speed links are currently used to handle the the university's data traffic, but they are not operating at capacity.

Washington Update

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — **US Sprint Communications Co.** recently urged the Federal Communications Commission to reject **AT&T's** proposed **Hospitality Network Service (HNS)** as anticompetitive and in violation of the Communications Act of 1934.

AT&T's proposal called for a high-volume telecommunications service for the hotel industry that would give bulk discounts to large hotel chains in addition to commissions for referring hotel customer calls to AT&T.

US Sprint said AT&T understated access and marketing costs and overestimated anticipated profits for the service in its tariff filing with the FCC.

In addition, US Sprint claimed AT&T's termination penalty was unreasonable.

"AT&T proposes charging HNS customers over half a million dollars per month if they terminate service prior to the expiration of their one-year contract."

GSA delays FTS probe

The **U.S. General Services Administration (GSA) Board of Contract Appeals** last week delayed its investigation into possible improprieties in the recent award of five contracts worth $55 million for **Federal Telecommunications System 2000** switching services.

The GSA Board of Contract Appeals, which is responsible for investigating contract complaints, postponed its pending investigation into allegations made by **AT&T** and **Nynex Corp.**, at the request of GSA officials.

AT&T filed a complaint with the board on Oct. 26 claiming the GSA applied different evaluation standards to AT&T's bid than to other competitors' bids. Nynex made similar claims.

AT&T won one of the five contracts for switching services designed to upgrade the existing FTS long-distance network. **Bell Atlantic Corp., Pacific Bell Telephone, Southern Bell** and **US West Information Systems** won the remaining contracts. Nynex did not win a contract.

"The GSA motion for a delay was granted because certain allegations have recently come to light which the GSA inspector general must review before proceeding with the investigation," according to a GSA statement.

Those allegations include charges that certain GSA officals leaked sensitive bid information to various competitors prior to the final bid deadline, according to industry sources.

Communications policy review

The **U.S. Department of Commerce, National Telecommunications and Information Administration** recently announced plans to undertake a massive review of U.S. domestic and international communications policy.

Assistant Commerce Secretary Alfred Sikes announced plans to conduct a study of conditions in 20 communications and information industry markets, such as telephone service, consumer electronics and computer services.

The study, entitled **"Telecom 2000,"** will identify both existing and future challenges facing these various industry segments and will make national policy recommendations designed to help foster future industry growth.

The NTIA will work wth other Commerce departments and federal agencies such as the Federal Communications Commission.

"As we look toward the year 2000 and the central role that communications will play, we need to make sure that American business has the electronic tools it needs to stay competitive in world markets," Sikes said.

"We also want to make sure the public has full access to all the communications and information services they want and need," he said. ☐

UMass plans RFP

continued from page 11

few select corporations that operate large communications nets.

With switching systems at all three campuses operating at maximum capacity, the school enlisted the aid of Economics & Technology, Inc. (ETI), a Boston-based communications consulting group, which conducted a detailed study of the university's voice and data communications needs.

Martin Smith, assistant vice-president for information management and data processing director for UMass, said the ETI study recommended the state college adopt a universitywide telecommunications strategy, rather than allow

Getting a VSAT network d

Taking risks can be an important part of doing business. But it shouldn't be part of choosing a communications system.

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Say, for instance, a hotel chain needs to check room availabilities and confirm reservations between a central office and more than 200 different locations. By using two-way data transmission, they can transmit packetized information at user data speeds of up to 9.6 kbps. Sending information this way is not only incredibly efficient, it's virtually error-free.

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Yet, when it comes down to it, the most important part of our SKYNET Star Network Service is our AT&T people—people who are available to offer their expertise in data communications, network management,

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satellite engineering capabilities, and management of earth-to-satellite links. They'll work with you to customize a Star Network solution that works best for your business.

And, most importantly, they'll make sure it's not risky business.

For more information about AT&T SKYNET

each campus to upgrade its own communications systems. The ETI report also called for the rewiring of each building on the Amherst campus.

The rapid, unforeseen growth of all three campuses had pushed switching systems to the limit. "We decided that the most expensive option would be to do nothing — to continue along down the same path," Smith explained. "The Boston campus people had told us in 1983 that their system would last only two to four more years and would then have to be replaced," Smith said.

"The UMass Hospital on the Worcester campus said its telephone system would not be able to keep pace with growth," Smith said. The hospital could not wait for the new network, due to be completed in 1989. This group went to bid for a new private branch exchange and decided to lease an AT&T System 85, which now serves 3,300-lines, for roughly two years.

> The rapid, unforeseen growth of all three campuses had pushed switching systems to the limit. "We decided that the most expensive option would be to do nothing — to continue along down the same path," Smith explained.

Smith assembled an elite project team in preparation for the universitywide network undertaking. This group included Doug Abbott, associate vice-chancellor for computing and information systems for the university, and Robert Poirier, telecommunications system campus project manager for UMass. Poirier was chosen for the team because of his extensive background in construction with a large railroad conglomerate. These project members will determine which vendor is awarded the network bid.

Depending on which vendor team is ultimately chosen to build the net, the Amherst campus portion of the endeavor will require the addition of 14 to 20 manholes to the university's current 170-manhole system. "We will be tearing up much of the campus over an 18-month period," Poirier predicted. "We hope to do most of the digging during the two full summers included in that period.

"Two years ago, we had an engineering firm perform a complete conduit and cable survey," Smith said. "That was when we found out that our conduits were 95% full."

Unlike many other users who rely on consultants to handle the entire networking project from inception to operation, UMass enlisted the aid of consultants only for limited project guidance and objective input.

Abbott said, "We expect the consultants we use to keep us informed as to vendors' product and service directions. We also use consultants to help us work out technical issues rather than have them write the RFP."

Some services were provided by Telecommunications Management Corp. (TMC), a Dedham, Mass.-based communications consulting firm. "Their help was invaluable," Smith said. "We have experienced personnel, but we really needed additional help from outside."

The UMass project team also decided to survey its inside wire plant before starting to assemble the network RFP. The group used UMass students to perform the initial campuswide site survey. Abbott said the data from this effort was matched against information held by the university's space management office.

"Together we indentified a total of 3,700 rooms that were not wired to support telephone," Abbott said. "We wanted to wire many of these sites to handle both voice and data communications. In the future, a classroom may need a terminal in addition to a telephone."

The project team was presented with eight network proposals (two of the six vendor teams submitted two proposals), none of which fully met the university's requirements. "Our physical plant people and our landscape engineers have reengineered the network architectures of all proposals," Abbott said. "We found errors in each proposal, so we challenged the vendors on those particular items."

The vendors, he said, were responsive and willing to work with UMass staffers to revamp the proposals. "You just can't close your eyes, cross your fingers and hope everything works out," Abbott said.

Despite numerous demands on their time, Abbott and other members of the project team began traveling to other users' sites seeking input from operators of campus and corporate communications networks. Users visited included the University of California at San Diego, the University of Michigan, Lehigh University, the University of California at Los Angeles, Wells Fargo & Co., Polaroid Corp. and Price Waterhouse. ◻

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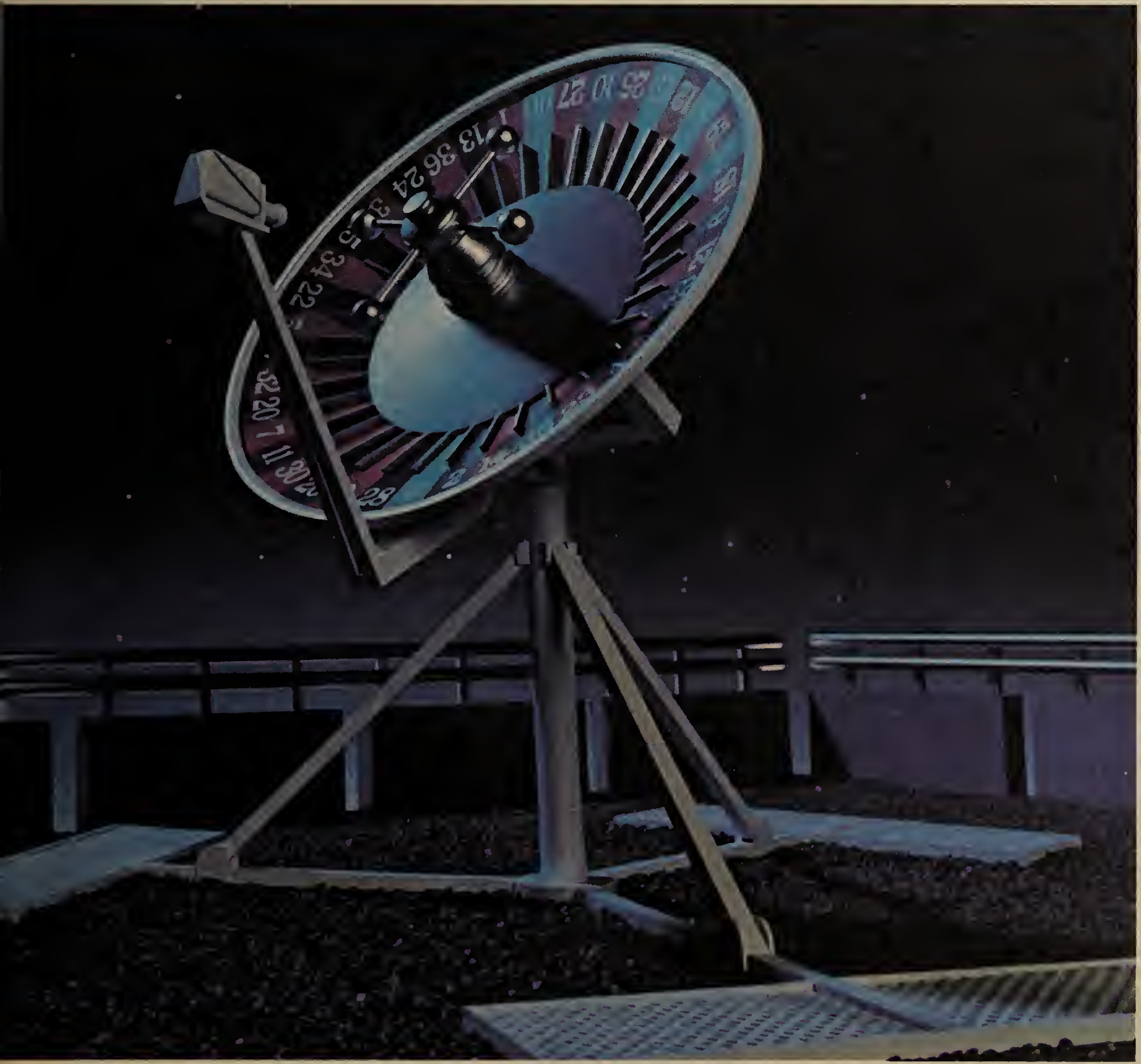

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LOCAL NETWORKING

> “When you finally get to the top of the OSI protocol stack, don’t look down. It’s a long way to the bottom.
>
> **Craig Burton**
> Senior vice-president
> Corporate marketing and development
> Novell, Inc.
> Provo, Utah

NETWORKING SPECIFICATIONS

Standards writing clears early hurdles

MAP/TOP users review TOP-NETBIOS link spec; IEEE progresses on Ethernet over twisted pair.

BY PAULA MUSICH
Senior Editor

The slow, creeping progress of networking standards recently saw an uncharacteristic flurry of activity from the IEEE 802.3 committee, the MAP/TOP Users Group and the Network Computing Forum.

Recent developments include: further progress within the IEEE 802.3 to create a standard for Ethernet on nonshielded twisted-pair wire; the specification of a standard interface between the Technical Office Protocol and IBM’s Network Basic I/O System protocols; and advancement of a proposal within the Network Computing Forum outlining a common approach to sharing computing resources in a network.

The IEEE 802.3 study group working on a proposal for Ethernet over nonshielded twisted pair cleared three of the five hurdles required for the group to become an official standards-writing task group.

The criteria that the group must satisfy include: demonstrating the market need for such a standard, showing that it can be compatible with existing 802.3 standards, giving it a distinct identity, demonstrating that it is technically feasible and showing that it is economically feasible.

Members of the 802.3 committee, in an IEEE 802 plenary meeting in Ft. Lauderdale, Fla., voted to accept a proposal from the study group that satisfied the first three criteria, and the group expects to satisfy the last two before the IEEE’s March plenary meeting in San Diego.

Pat Thaler, chairwoman of the study group and a development engineer at Hewlett-Packard Co., said that this progress is unusually swift, and that it puts the study group months ahead of schedule.

Others involved in the study group, however, say that getting acceptance on the criteria of market appeal, compatibility and distinct identity is generally not a difficult, time-consuming task. “The first three are easy to pass: It’s like motherhood and apple pie,” said Ron Schmidt, chief technical officer of SynOptics Communications, Inc.

Deciding how to meet the last two criteria will be much more difficult and more time-consuming for the group because it will involve politically sensitive decisions about which technical approach to use, according to Schmidt (“Factions split on standard,” *NW*, Oct. 26). The decision will take into account proposals from each

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PC LANS

3Com to ship adapter cards that relieve “RAM cram”

BY PAULA MUSICH
Senior Editor

MOUNTAIN VIEW, Calif. — 3Com Corp. will soon begin shipping EtherLink+ and TokenLink+ network adapter cards that are designed to relieve “RAM cram,” or memory congestion, and free up space to execute programs, *Network World* has learned.

The enhanced adapters, equipped with a Link+ Optimizer, will off-load IBM Network Basic I/O System protocol processing from the personal computer’s CPU. This will free some 100K to 120K bytes of memory in the personal computer for application processing, according to Hugh Macworth, systems marketing manager at 3Com. IBM Personal Computers and compatibles have a maximum of 640K bytes of memory with which to execute programs.

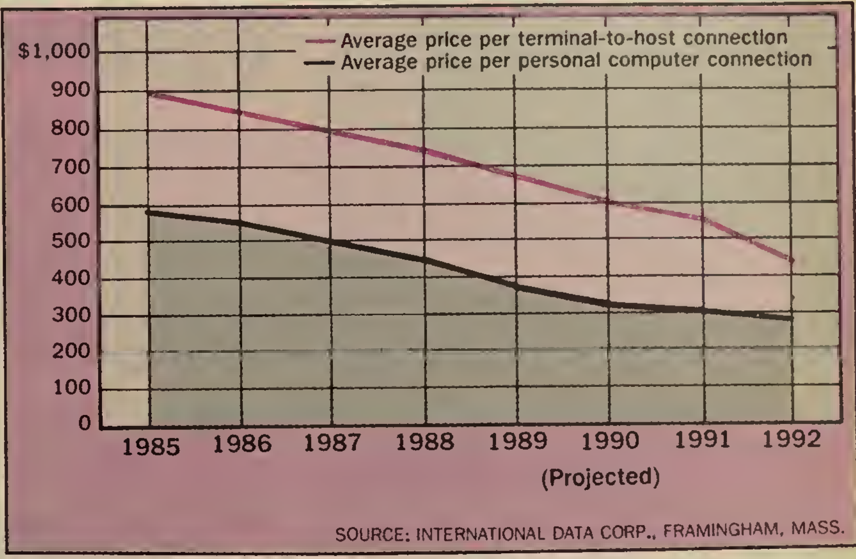
“This project was designed to move the dividing line between the PC’s processor and the network adapter card from the data link level to the middle level, where NETBIOS is implemented,” Macworth said.

3Com, which is currently beta testing the enhanced cards, won’t support the Link+ Optimizer on its low-end network interfaces because processing the protocols requires the board to be microprocessor-based. The Plus cards include an Intel Corp. 80186 microprocessor and 256K bytes of memory.

The Link+ Optimizer also allows the EtherLink+ and TokenLink+ adapter cards to operate in networks running other vendors’ network operating systems, Macworth said. Because the adapter cards can execute NETBIOS, they can be used with any networking software that supports NETBIOS. Such software includes IBM’s PC LAN Program, Novell, Inc.’s NetWare and others.

3Com will offer the enhancement with all Etherlink Plus and TokenLink Plus adapters at no extra charge.

The average cost of workstation connections



SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

LANMARKS
ERIC KILLORIN

3Com, Novell in war of the words

Two leading independent local net companies shared the podium for LocalNet ’87’s keynote address in Los Angeles earlier this month. 3Com Corp. was represented by President and Chief Executive Officer William Krause, and Novell, Inc. was represented by Craig Burton, senior vice-president of corporate marketing and development. Although many attendees probably expected these able spokesmen to wrestle verbally to the point of exhaustion, the audience was treated to an orderly presentation on industry trends, laced with positioning statements.

Much of the discussion concerned the role of networking specifications for IBM’s OS/2, the operating system for the Personal System/2 family. The vendors couldn’t have more different philosophies of supporting OS/2.

Why is OS/2 so important to 3Com and Novell? The obvious reason is that IBM wishes to migrate users of MS-DOS to the new, more capable OS/2. A new operating system requires a new set of networking products, not the least of which is IBM’s newly announced OS/2 LAN Server, which will replace the MS-Net specifications used in DOS. Equally vital is IBM’s position with regard to the OS/2 LAN Server, where OS/2-based networking will be supported on both the the workstation and server.

3Com, as a result of its work with Microsoft on the OS/2 LAN Manager, will offer network software (3+Open) that allows OS/2 to run both on workstation nodes and on server nodes. Novell, on the other hand, will continue supporting NetWare at the server, but will support OS/2 at the workstation. Through various interfaces, Novell is assuring users that its approach will not jeopardize compatibility with OS/2 applications. So, the end result is this: 3Com says support for OS/2 at the server is essential for consistent application-sharing in a local-area network. Novell, on the other hand, says it can provide application compatibility for OS/2 without replacing NetWare at the server.

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Killorin is the publisher of “Netline,” a newsletter on computer networks, a publication of Hyatt Research Corp. in Andover, Mass.

Standards writing

continued from page 15

company represented.

The study group has divided into two camps regarding use of some network components. One favors use of passive (nonpowered) network adapters and baluns, devices that connect balanced coaxial cable to unbalanced twisted-pair wire. The other faction advocates use of active (electrically powered) transceivers and hubs connected directly to the twisted-pair wire, according to Thaler.

HP, SynOptics, Wang Laboratories, Inc. and David Systems, Inc. side with the first camp. 3Com Corp. and Digital Equipment Corp. are in the second camp, although DEC has not yet presented its proposal to the study group, she said.

DEC, which requested and received an extension on the study group's deadline for submitting proposals on the five criteria, will present its proposal at the group's January meeting.

In other standards developments, the Technical and Office Protocol-Network Basic I/O System technical subcommittee of the MAP/TOP Users Group began soliciting comments last week on its recently completed specification for a standard interface between International Standards Organization Class IV transport protocols and NETBIOS.

Although the group is committed to the use of ISO standards in its suite of communications protocols for technical and office environments, the group recognized that TOP network users will want to take advantage of the large number of applications written to IBM's NETBIOS interface, according to Stephen

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3Com, Novell in words war

continued from page 15

3Com also maintains that application developers are in a better position by writing to an operating system that is supported on both the workstation and the server. "With other networking solutions in which OS/2 is supported on a network workstation only, the network workstation communicates to a proprietary file server that is not based on IBM's OS/2," Krause said. "This quality restricts end customers' ability to take advantage of the benefits available from OS/2's distributed applications."

Novell counters that NetWare's support for multivendor connections, redundancy and higher performance make it a more feature-rich alternative to using OS/2 as the base for the network operating system at the server.

The issue then becomes whether it is best for the user to run OS/2 at the server and rely on firms like 3Com to embellish the IBM standard, or if a hybrid solution of NetWare and OS/2 is better where heterogeneous networking is more important than 100% compatibility.

Novell is walking a very fine line by continuing to support NetWare at the server. With such a huge investment in NetWare and an installed base of 110,000 NetWare licenses supporting more than 770,000 users, it's no wonder Novell is at a difficult crossroads: Support OS/2 at the server and risk losing all that has been gained from NetWare's solid footing in the market, or burn the candle — or cable — at both ends and provide interfaces from NetWare to OS/2.

Both 3Com and Novell have strong product offerings and are sufficiently well entrenched in the market to ensure continued growth. With planned delivery dates for the IBM OS/2 LAN Server fully 12 months away, the buyers of 3Com's and Novell's products are perhaps less concerned with a vendor feud than with the business of moving information across their nets. ◻

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DATA DELIVERY/ NET MANAGEMENT

BELLCORE sets mark

Bell Communications Research, Inc. recently set a record for the amount of information transmitted over a single-mode fiber-optic cable. In an experiment at the Morris Research & Engineering Center in Morris, N.J., 27 billion bit/sec of information were sent to 18 nodes on a star-configured net. The bandwidth could support 400,000 simultaneous conversations or transmission of one million pages of text.

▶ *DATA GENERAL*

DG bares network strategy

VP Colin Crook discusses acquisitions and future agenda.

Although minicomputer maker Data General Corp. of Westborough, Mass., has had its share of financial troubles — losing $22.6 million in its most recent quarter — the company is on the move.

In the past 18 months, DG began developing a private branch exchange, entered the carrier business, integrated microcomputers into its network architecture, announced plans to migrate its architecture to meet international standards and teamed up with Nippon Telephone & Telegraph Corp. to develop a digital backbone switch.

The objective driving DG's strategy is to position the company as a major player in the networking market. Network World *Senior Editor Paul Korzeniowski recently tracked down the man behind the strategy, Colin Crook, senior vice-president of DG's communications systems group.*

What's your job at DG?

Historically, DG's reputation was built on superminicomputers and the OEM business. My job is to change the company from a classical superminicomputer- and hardware-oriented supplier to a player in the information business, which means a greater emphasis on networking.

There are lot of DG employees questioning some of the recent moves. Many have an old-fashioned view of communications and see it as a plain old telephone or analog modem. They don't understand future networks.

We spend a lot of time cajoling people and trying to force change in the company. The real challenge is defining the shift in a manner in which the company can make a business out of it.

We want to sell new products to our installed base and migrate into new markets. We don't want to undertake pioneering work; the work has to be connected to a business strategy. SNA is a business strategy forged by the Armonk [IBM] standards committee. If ISDN is to succeed, it has to be a business strategy for communications vendors. I visited with one of the RBHCs, and the company did not view ISDN that way. Instead, the company saw it as interesting technology. I think that is foolish.

Why has DG begun emphasizing communications products?

Since the middle of the 1960s, analysts have talked about merging computers and communications, but the interaction has been fairly minimal. Computers use communications, such as modem links, and communications works with certain computer capabilities, such as Telex, but the two really do not depend on each other. For the first time, there is hard evidence that the two areas are merging and that the merger will present new business opportunities. Companies have to be organized to do something substantial when opportunities arise. We think that now is the time to organize.

Why are the two disciplines merging?

Colin Crook

Two factors are dramatically affecting communications. First, there have been tremendous developments in fiber-optic technology, so bandwidth is available everywhere. Second, the impact of digital communications technologies is driving the shift. The computer business was built on the impact of digital electronics, but such capabilities did not touch the communications industry until recently.

Networks were once used only to connect computers together and were not very flexible. Now, one

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▶ *COMMUNICATIONS CONTROLLER*

Teleos offers T-1 interface for Unibus-based VAX minis

BY MARY LINEHAN
Staff Writer

EATONTOWN, N.J. — Teleos Communications, Inc. introduced a T-1 interface for Digital Equipment Corp. VAX computers last week that is compatible with AT&T's Accunet T1.5 service.

The T100U Unibus Controller is a general purpose Unibus interface for T-1 lines, which provide a full-duplex data transfer rate of up to 1.544M bit/sec. According to a Teleos spokesman, major T100U functions include: parallel-to-serial and serial-to-parallel conversion, data formatting and deformatting and intelligent buffer management using Direct Memory Access.

The new interface enables direct connection to a T-1 network without additional external hardware. The T-1 format can be used with most microwave radio and fiber-optic multiplexer equipment, the vendor said.

T100U software used with the board implements a Link Access Procedure D High-Level Data Link Control protocol and, when used with DEC's VMS operating system, provides access to DECnet architecture protocols. This allows applications based on these higher level protocols to operate transparently over T-1 facilities. According to the vendor, drivers for Unix System V and Berkeley Unix 4 are also available.

The T100U includes 256K bytes of on-board random-access memory for storage of unacknowledged packets that have been transmitted and received but have not yet been transferred to the host memory. The vendor said on-board diagnostic LEDs help monitor and indicate the state of T-1 lines.

The T100U controller is priced at $4,000, the diagnostics and test software is priced at $400, and the T100U drivers for VMS, Unix System V and Berkeley Unix 4 sell for $400 each, according to the vendor.

Teleos, formerly General Communications Corp., designs, makes and markets T-1 wideband and Integrated Services Digital Network access products for a variety of computing systems.

▶ *SATELLITE NETWORKING*

Energy firms pick Nova-Net VSAT net

BY JOSH GONZE
Staff Writer

ENGLEWOOD, Colo. — Two energy companies, Columbia Gas Transmission Corp. and All American Pipeline Co., recently contracted with Nova-Net Communications, Inc. for the installation of VSAT networks.

Columbia Gas will use Nova-Net's satellite network to replace leased lines from nine remote sites to a central gas-control station. The very small aperture terminal network will allow Columbia Gas to cut costs and improve communications reliability simultaneously, according to George Yeager, manager of engineering at the company.

All American Pipeline will use the VSAT network to monitor 20 sites along a new 1,750-mile oil pipeline.

Nova-Net, based here, announced last month that it will build a VSAT master earth station in Dallas to target customers with fewer than 100 sites in the south central U.S. The facility will house both C-band and a Ku-band master-earth stations, equipment purchased from Equatorial Communications Corp.

The company said its facility will be dedicated to applications for supervisory control and data acquisition. The goal of installing the master site in Dallas is to make the company's VSAT services more appealing to energy companies, according to a spokesman. Nova-Net's current customers include a group of electric power and pipeline companies, some or all of which will eventually be converted to the Dallas facility, the company said.

DG bares network strategy

continued from page 17

can merge data, voice and video over the same pipes. The network is becoming an information vehicle rather than a simple connection between two computers. Corporations are merely attaching computers to the network. This approach presents significant changes in how future computer systems will be designed. My view is not universally held in DG, and there are recalcitrant computer people who think the computer will remain the center of the universe.

How does the company plan to add communications expertise and products to its line?

We knew we could not supply all communications products ourselves; no company can. So, we tried to assemble a knowledge base, and part of the base came from acquisitions. We then tried to understand what was required in the information business so we could undertake selected product developments and form suitable alliances.

We focused on three new areas. First, we decided that the action was going to be in building digital wide-area networks. We are working with [Nippon Telephone and Telegraph Corp.] on a product that will interface between wide-area networks and local networks.

Second, we entered the carrier services business with our acquisition of Dama Telecommunications [Corp.] We wanted to learn to design and build private nets.

Third, we wanted to understand digital voice and switching technologies. So, we bought a portion of a PBX company and are working on a new digital switching product.

When will DG announce its PBX?

The product will be announced during our fiscal year, which runs until next September. I can't say much about the product, but we're not moving into the classic PBX business.

Why did the company purchase Dama Telecommunications, and what role will it play in future products and services?

The major reason was we needed to broaden our communications knowledge base. We do not aspire to set up a large carrier service business, and we won't build huge wide-area networks with our own transmission facilities. But we want to understand the issues involved with running and managing carrier facilities. So we offer special services to our customers, and Dama runs our internal network.

What strategy is the company following to fortify its data communications product line?

DG was an early adopter of a three-tier architecture: personal computer, departmental system and mainframe. There are 14 million personal computers out there, and they all can't simply connect to the mainframe. Also, we knew we could not blow IBM out and bring about the demise of the mainframe. So we focused on developing IBM connectivity in two areas.

For the departmental systems, we have products that link our systems to IBM's systems, such as our [Professional Office System]-to-[Comprehensive Electronic Office] link. Also, we focused on enabling a personal computer to communicate with a back-end system, like a departmental computer.

What is your view of the International Standards Organizations Open Systems Interconnect model?

We've been a strong supporter of standards and are pushing hard to be a genuine implementer of OSI. But I am concerned that DEC plans to hijack OSI and say OSI is in reality DECnet. Such a move would be tragic, because all the companies have been working to free themselves from one company dominating the standards process.

Why are you concerned about DEC?

Vendors are going to try to turn OSI into a business strategy. We all will wrap ourselves in a cloak saying "We are OSI-compliant," but there will be idiosyncrasies among OSI products. OSI specifications are defined, but you and I could design products that will not absolutely follow the specs.

Such problems are the reason [the Corporation for Open Systems] was formed. The higher one goes in the architecture, the more difficult and vague the specifications become. I think one company will try to get its products out first and claim full OSI compliance. Other implementations may be judged against that product rather than using tests from COS.

Will COS be able to prevent such a scenario?

I am a member of COS, and I hope so. But the organization is only starting to develop tests for Ethernet. The verification world is very complicated, and having everyone implement the specification in the same way will be a real chore.

Our look at open systems will open a few doors for you.

NETWORK WORLD
Closed is open, says Ken Olsen
IBM PCs promise network advances
Early NetView users pleased
AT&T, Northern Tel to address low end
Trade restraint issue tops show

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Sept. 14	Sept. 2	Data General
Sept. 28	Sept. 16	IBM
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NETWORK WORLD
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COMMUNICATIONS MANAGER

> “You have to be very careful of vendors. If you don't ask the right questions, they aren't going to tell you the answers.
>
> **Chuck Garrison**
> Assistant vice-president
> Telecommunications trading operations
> Chicago Board Options Exchange

Salaries of telecommunications executives by region

	1986	1985
Northeast region	$63,654	$57,250
New York City	$76,750	$68,783
Great Lakes region	$68,264	$63,926
Chicago	$72,414	$66,657

Average salaries of communications professionals with title of vice-president or director

SOURCE: INTERNATIONAL COMMUNICATIONS ASSOCIATION, DALLAS

EDUCATIONAL PROGRAMS

Execs look for an edge at AT&T user seminars

BY MARY LINEHAN
Staff Writer

NEW YORK — Executives from many large corporate, government and health care organizations seeking a way to use communications technology to gain a competitive edge are turning to AT&T's Executive Education programs for possible solutions.

According to George Ort, district manager for AT&T's Center for Executive Education, the executive seminars run about once a month at various AT&T Learning Center sites around the country. The seminars are targeted at “policy-level executives” from Fortune 1,000 companies and their counterparts in the not-for-profit and nonindustrial sectors, who attend the program with their AT&T account executives.

Users attending “Business Success Through Information Technology” here late last month expressed a variety of expectations for the four-day seminar. A list compiled from the 20 executives in attendance included questions on using “information technology to solve business problems and establish a competitive advantage,” on how other companies are “using and benefiting from new communications technology” and how to expand top level management's understanding of how communications can be used as a strategic planning tool.

“The whole issue of information technology and its relevance to an organization's goals and objectives is increasing,” Ort said. “Companies are no longer just trying to automate the back office. They are using communications and computers to address business issues.”

AT&T, which has an extensive education program in place, began running the specialized executive-level seminars in 1983. “The current ‘Business Success’ seminar is an outgrowth of our first executive offering — ‘The Strategic Management of Information Systems: An Executive Perspective,’ ” Ort said. “That first seminar led to the natural set of questions that have plagued many executives, centering on how they can get a competitive advantage out of the huge investment that so many companies make in communications technology.”

The current course curriculum is based on the “critical, evolving issues in communications today,” Ort said. “We take the kind of questions raised by attendees at past conferences and then go to several leading consultants to find out what they were being asked by users,” Ort said. “Last, we consult with some of the leading academic thinkers. We then take all of the information we've culled from these sources and try to determine what are the emerging issues — especially those revolving around competitive advantage.”

Ort said these issues fall into three basic areas: assessment of current uses of communications technology against the strategic goals of the company; management of change within a company when that change is brought about by a reorganization of the communications technology scheme; and management of information technology to achieve real business value.

“You attend these kinds of sessions to try to find a way to make your company's investment [in communications technology] pay off on the business side,” said Jerry Curry, director of information systems operations at Whirlpool Corp. of Beton Harbor, Mich.

ASSOCIATIONS

The Energy Telecommunications and Electrical Association (ENTELEC) will celebrate its 60th anniversary at its annual conference and exhibition to be held in Dallas from March 13 to 16.

ENTELEC '88 will include about 70 hours of papers, panels and seminars, as well as more than 300 booths displaying equipment and services.

Founded in 1928 by a small group of oil and gas company representatives, the organization originally served as a forum for sharing information on communications and electrical problems of the oil and gas industry. Recently, the organization broadened its membership to include electric utilities and other energy-related companies.

The Association of College and University Telecommunications Administrators will hold its annual Winter Seminar in Tucson, Ariz., from Jan. 10 to 13.

The seminar, which will be conducted by Michael Finneran, president of dBrn Associates, Inc., will focus on integrating voice and data communications.

GUIDELINES

ERIC SCHMALL

Learning to blow your own horn

Nothing is as frustrating in the communications field as unacknowledged success. More often than not, it is the communications manager who is responsible for this situation. In order to build a successful team, managers must make a conscious effort to develop a workplace environment that breeds victories. The steps toward that ambitious goal include identifying the measures of success, promoting accomplishments and celebrating the event.

Many victories in the realm of telecommunications are Pyrrhic. A new private branch exchange may be installed on time but may have also involved massive disruption to the users during the transition; a new type of toll carrier might be selected for the organization so that per-minute cost can be reduced, but line quality may be so poor that users revolt; a new phone feature may be introduced to enhance productivity but may be regarded as so cumbersome that it is completely ignored.

In each of these examples, some dimension of success might have been realized, but the overall effect fell far short of the original intent. Managers have to establish the proper definition of success with their subordinates. The obvious measures — that is, task accomplishment on time and within budget — will not suffice. Other yardsticks will help to refine the definition: numbers of outages, system availability and number of user complaints can assume an importance that reaches far beyond the more obvious traits of success.

Publicizing success is a subtle art. Too often, a manager will shy away from promoting an accomplishment for fear of being misinterpreted as a braggart or egomaniac. Effective leaders know how to thump their drums before their superiors without appearing ingratiating. Using the predefined measures of success, managers can report objectively each facet of a project's success and how well each was accomplished.

Equally important in this report is the emphasis managers give to those who accomplished the work. Unless managers personally handle all aspects of a task, credit belongs to those in their charge.

Communications managers should establish some informal means by which to recognize a job well done, something that falls short of a promotion but goes far beyond a pat on the back. This could be an official written commendation that has much more sustaining power than an oral compliment. Another way would be to host a lunch or dinner that celebrates the success with all involved participants.

The emphasis here is not upon the actual value of the reward but on the symbolic act itself. Through the similar creation and judicious use of rewards, managers will build an environment that spawns hard work, devotion and success.

Schmall is network systems manager for an insurance holding company.

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NEW PRODUCTS AND SERVICES

See inside for:
▶Octel boosts Aspen storage
▶Eicon 5250 Support package
▶Allied Telesis transceivers

▶ *MACINTOSH-TO-UNIX*

Apollo, IPT team up to market uShare package

BY MARY LINEHAN
Staff Writer

CHELMSFORD, Mass. — Apollo Computer, Inc. and Information Presentation Technologies, Inc. (IPT) last week announced an agreement to jointly market uShare, a new IPT product designed to enable Apple Computer, Inc. Macintosh computers to be integrated with Apollo Unix workstations.

UShare allows Macintosh and Apollo workstation users to share files and resources transparently, including Apollo's multitasking Unix operating system and distributed filing system and Apple printers, scanners and other peripherals. Combined with Apollo's interconnect products for the IBM Personal Computer and compatibles, uShare allows Apollo workstations, Macintoshes and personal computers to function as a shared computing system.

According to an Apollo spokesman, uShare is the first full commercial implementation of the Apple Filing Protocols in a Unix workstation environment.

UShare allows Apollo workstations to communicate with Macintoshes and enables Macintosh users to share Apollo's network resources, including file sharing, electronic mail, print spooling, terminal emulation, virtual disk capabilities and the ability to search several network file servers to locate a file. UShare includes software for both Apollo and Macintosh devices and an IBM Personal Computer AT-compatible board installed in the Apollo Series 3000 Personal Workstation or Series 4000 Personal Super Workstation.

According to the Apollo spokesman, Macintosh users on an AppleTalk network can use uShare to access Unix System V or Berkeley Software Distribution 4.2 Unix files on either Apollo's token-ring network or an Ethernet net.

A uShare server implemented on an Apollo workstation and an AppleShare server on a dedicated Macintosh behave identically when accessed by a Macintosh running AppleShare Workstation Software.

The total uShare package is priced at $3,000, including a server that supports an unlimited number of Macintoshes. The software that supports the Macintosh functions costs $195 and the necessary card costs $295.

Apollo Computer, Inc. is located at 330 Billerica Road, Chelmsford, Mass. 01824, or call (617) 256-6000. Information Presentation Technologies is located at P.O. Box 8609, Calabasas, Calif. 91302, or call (818) 347-7791.

▶ *TELEMARKETING PRODUCTS*

AT&T adds tools for telemarketing

Agrees to sell other firms' packages.

BY MARY LINEHAN
Staff Writer

BASKING RIDGE, N.J. — AT&T recently announced three additions to its family of telemarketing products and services, as well as a co-marketing agreements to sell telemarketing software.

The Names 10 personal computer-based Scheduler is a personal computer-based management system that helps telemarketing centers develop employee schedules by predicting call volumes and staffing needs, according to the vendor.

Using a historical archive that is updated weekly, the Scheduler forecasts call volumes in 15-minute increments for the coming week and calculates how much time an average call takes — considering speed of answer, talk time and after-call work time — to figure how many agents are needed.

AT&T said the system translates these numbers into a schedule by looking at the work shifts of employees and developing a combination of shifts to meet the forecasted need at a telemarketing center.

AT&T also announced the AT&T Outbound Management System and Inbound Call Director for telemarketing centers. The Outbound Management System automates dialing of outbound calls by going through the telemarketing center's computerized call list and dialing each number in turn. When the call is answered, the system immediately forwards the call and the data file associated with the number to an available agent.

According to AT&T, the outbound call manager can regulate the flow of calls to individual agents or groups of agents and can also generate detailed reports on each agent's total talk time, number of calls completed and average call-holding time. The system, which routes each outbound call to the least expensive available trunk, is compatible with a number of on-line host computers that permit on-line interaction from agent terminals, AT&T said.

The AT&T Inbound Call Director answers calls coming into a telemarketing center with a recorded message, prompts callers to enter routing information and then passes the calls to their appropriate destination. The Inbound Call Director can produce a detailed traffic report to show how many calls go through the system in an hour and a data report to summarize customer responses and show where calls are routed.

Additionally, AT&T entered into co-marketing agreements with Brock Control Systems, TARP Information Systems and Coffman Systems, Inc. Brock, TARP and Coffman each produce software that supports telemarketing applications.

▶ *LOCAL NETWORKING*

Xyplex offers 120-port LAN server

BY JIM BROWN
New Products Editor

CONCORD, Mass. — Xyplex, Inc., a maker of Digital Equipment Corp.-compatible equipment, last week released a terminal server capable of linking up to 120 devices to an Ethernet local network.

The firm's MAXserver 5000 links RS-232-compatible asynchronous terminals, IBM Personal Computers, printers, modems and asynchronous host computer ports to an Ethernet network. The unit supports communications over an Ethernet network using Xyplex's terminal-to-DEC VAX VMS protocol or the Transmission Control Protocol/Internet Protocol's Telnet virtual terminal protocol.

MAXserver supports a total of 480 simultaneous terminal-to-host sessions. Each connected terminal is capable of supporting up to four concurrent host sessions.

MAXserver 5000, designed to compete against DEC's recently announced DECserver 500, accommodates 16 card slots, one of which is used to support an Ethernet transceiver. The remaining 15 slots can be used to support eight-port terminal server cards, a T-1 wide-area network link card or additional Ethernet transceiver boards.

Each port on the terminal server card supports full modem control, enabling any terminal or personal computer linked to the MAXserver 5000 to access a modem.

A remote MAXserver 5000 equipped with a wide-area network card is able to link to a similarly equipped MAXserver 5000 at a central site via a single-channel T-1 link. That wide-area network card is manufactured by Vitalink Communications Corp. and includes an integrated channel service unit/data service unit.

MAXserver 5000 can also be configured to support redundant Ethernet links. That feature requires the installation of two Ethernet transceiver cards, one of which operates in standby mode and takes over Ethernet link functions when the primary card fails. When outfitted with two Ethernet transceiver cards, the unit is also able to bridge two separate Ethernet networks.

MAXserver employs Xyplex's LANbus backplane bus to provide a link between the terminal server cards and the Ethernet Transceiver card.

Available in January, a MAXserver 5000 chassis supplied with an Ethernet transceiver card will cost $9,995. Each eight-port terminal server card costs $1,295, while additional Ethernet transceiver cards cost $1,495. The wide-area network card, which has not yet been priced, will be available next spring.

Xyplex is headquartered at 100 Domino Drive, Concord, Mass. 01742, or call (617) 371-1400.

First Look

Octel boosts voice storage on mid-range system

Octel Communications Corp. announced it has more than doubled the voice storage capacity of its Aspen Voice Processing System.

With a **High-Density Storage System** option, Octel's mid-range Aspen Voice Processing System supports up to 145 hours of digitized voice storage, up from the 64 hours previously supported. The increased storage for the Aspen Voice Processing System is available in increments of 19 hours. Maximum storage remains unchanged on Octel's low-end Aspen Branch at 12.4 hours and at 300 hours on its high-end Aspen Maxum System.

Based on the same high-density storage technology deployed on the Aspen Maxum, each 19-hour increment for the Aspen Voice Processing System is priced at $22,000. Current storage technology, which limits the system to 64 hours of storage, will remain available in 8.7-hour increments priced at $10,000 each.

Current users can move up to the new storage option under a special upgrade program.

Octel Communications Corp., 890 Tasman Drive, Milpitas, Calif. 95035, or call (408) 942-6500.

Software links PCs, PS/2s to System/3X minis

Eicon Technology Corp. announced software enabling IBM Personal Computers and Personal System/2s to access IBM System/36 or System/38 minicomputers via an X.25 network or leased lines supporting IBM's Synchronous Data Link Control.

The firm's **5250 Support** software enables existing versions of Eicon's Access/Qualified Logical Link Control (QLLC) and Access/SDLC software to make a stand-alone or local-area network-attached Personal Computer appear to a System/36 or System/38 as an IBM 5294 terminal controller.

When combined with 5250 Support software, Personal Computers can act like IBM 5251 or 5291 terminals. Likewise, Personal Computer-attached printers are able to act like IBM 5256 or 5219 printers.

Access/QLLC and Access/SDLC software work in conjunction with a Personal Computer-resident Eicon Technology Network Adapter board or Personal System/2-resident Single Port Communications Coprocessor board.

Those boards can be installed on a stand-alone Personal Computer or a Personal Computer attached to an IBM Network Basic I/O System-compatible local-area network.

Access/QLLC accesses the host via an X.25 packet-switching network line operating at up to 64K bit/sec. Access/SDLC communicates via a leased SDLC line operating at speeds up to 64K bit/sec.

When installed on a stand-alone Personal Computer or Personal System/2, 5250 Support supports nine concurrent host sessions, and each adapter board and software supports up to 32 concurrent host sessions on a local-area network.

Other Access/QLLC software components enable a Personal Computer to appear to an IBM mainframe as a 3270-type terminal or to a Digital Equipment Corp. host as a DEC VT100 terminal via an X.25 network.

The cost for adding 5250 Support to Access/SDLC ranges from $1,195 for a stand-alone Personal Computer or Personal System/2 to $2,895 for a local-area network version.

Adding 5250 Support to Access/QLLC ranges in cost from $1,495 to $3,195.

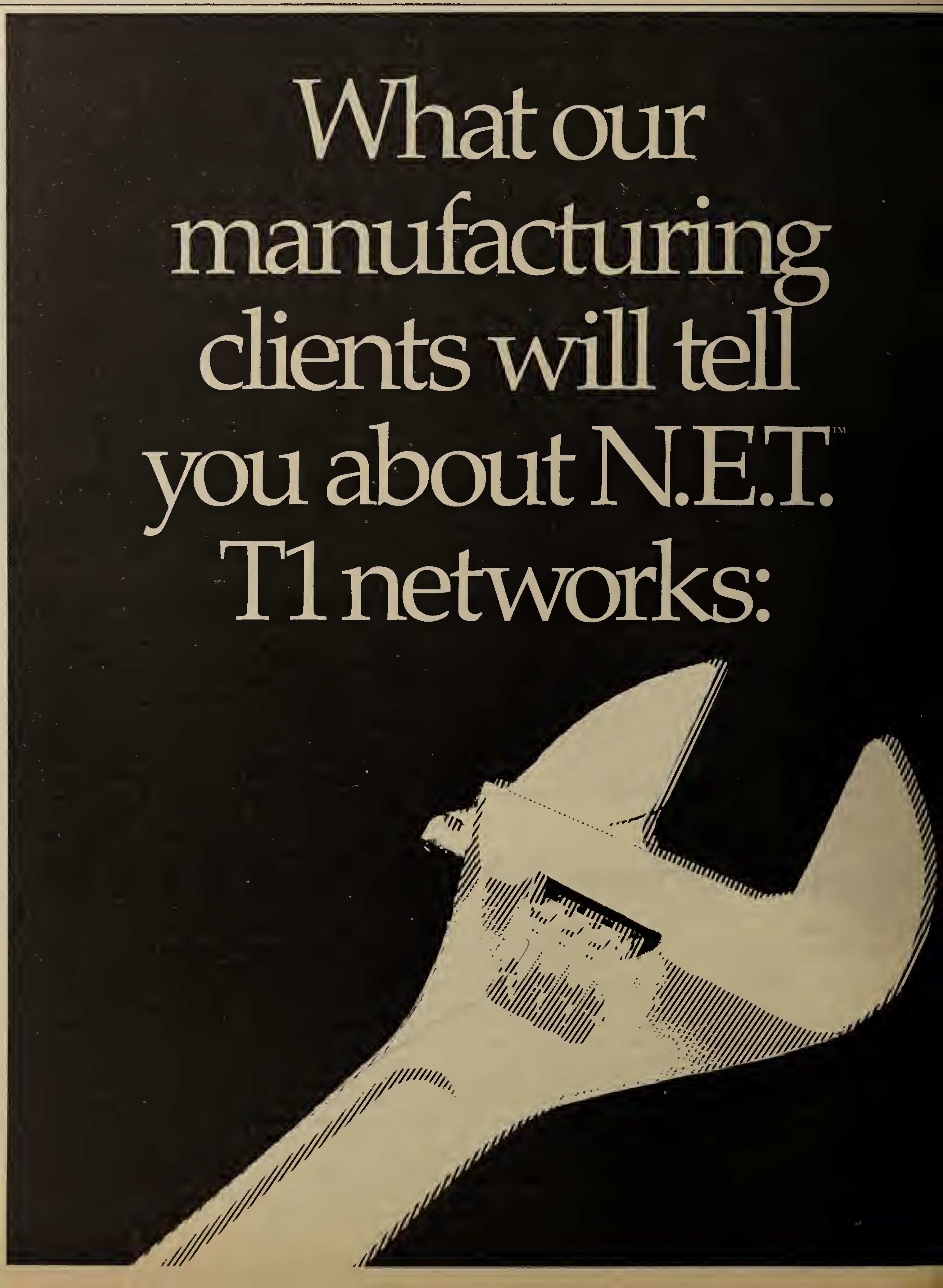
Eicon Technology Corp., 2196 32nd Ave., Montreal, Que. H8T 3H7, or call (514) 631-2592.

Software lets emulation boards act as gateways

Digital Communications Associates, Inc. released software that enables its Irma 2 and Forte PJ terminal emulation boards to act as network gateways. The boards can now link network-attached IBM Personal Computers to an IBM mainframe via an IBM terminal controller supporting IBM's Distributed Function Terminal (DFT).

The software converts Irma 2 and Forte PJ boards to DCA's IrmaLAN DFT Gateway product, which makes Personal Computers appear to a mainframe as 3270-type terminals in an IBM Systems Network Architecture network. It lets Irma 2 and Forte PJ boards link a Personal Computer in an IBM Network Basic I/O System-compatible network to an IBM 3174 or 3274 terminal controller supporting DFT.

The new package enables either board to support up to five concurrent 3270-type terminal sessions with an IBM mainframe. Other NETBIOS-linked Personal Computers running IrmaLAN SNA Workstation or IrmaLAN All Points Addressable Graphics Workstation software are able to establish mainframe sessions through the


What our manufacturing clients will tell you about N.E.T.™ T1 networks:

gateway Personal Computer.

Without the new software, Irma 2 and Forte PJ boards make standalone Personal Computers appear to an IBM host as IBM 3270-type terminals. The software that upgrades Irma 2 and Forte PJ boards to an IrmaLAN DFT Gateway is available for $395.

Digital Communications Associates, Inc., 1000 Alderman Drive, Alpharetta, Ga. 30201, or call (404) 442-4000.

Transceiver links up to 16 devices to Ethernet net

Allied Telesis, Inc. unveiled multiport baseband transceivers that enable up to 16 devices to share a single link to an Ethernet local-area network.

The eight-port **CentreCOM 800-BT** and the eight- or 16-port **CentreCOM 1600-BT** can link to IEEE 802.3- or Ethernet Version 2-compatible local nets. Up to 16 CentreCOM units can be linked, enabling up to 256 devices to share one Ethernet connection. A front-panel switch permits two devices attached to a CentreCOM to communicate, lessening Ethernet traffic.

The tabletop CentreCOM 800-BT is priced at $795. A 16-port CentreCOM 1600-BT costs $1,495, and an eight-port version costs $995.

Allied Telesis, Inc., Suite 1220, 2685 Marine Way, Mountain View, Calif. 94043, or call (415) 964-2771. ☐

▶ *NETWISE, INC.*

Code-creating tool out

BY JIM BROWN
New Products Editor

BOULDER, Colo. — Netwise, Inc. recently released software that eases an application developer's task of integrating communications functions into distributed applications.

Tools, a modular software package, automatically generates the C, COBOL, FORTRAN or Ada programming code required to support communications functions. The code can be integrated into applications via the compilers currently used by the programmer writing the application. The applications developed with this software link two vendors' computers transparently in order to exchange data and share computing power.

Tools runs on IBM mainframes and Personal Computers and on units from Sun Microsystems, Inc., Cray Research, Inc., Digital Equipment Corp., Convex Computer Corp., Elxsi, Gould, Inc. and Lockheed Corp.'s Calcomp subsidiary.

The product is similar to Sun Microsystems' Remote Procedure Call and External Data Representation as well as Apollo Computer, Inc.'s Network Computing System software, which enable developers to write applications that transparently link Sun or Apollo devices to different vendors' computers residing on the same network.

The software is also said to support the International Standards Organization's (ISO) Open Systems Interconnect model standards.

Tools' Protocol Data Unit (PDU) module generates code needed to translate one computer system's data format to ISO/DIS 8824 and ISO/DIS 8825 data formats. That data is sent via a network to another computer where another PDU routine translates the data to the format that computer needs.

A Remote Procedure Call module generates the code to link two computers transparently on the same network, enabling the local application to extract data or use CPU time on a remote computer.

A Network Libraries module interfaces the application to network protocols running on communications hardware. Netwise is expected to support interfaces to a DEC DECnet network, an IBM Systems Network Architecture net supporting IBM's Advanced Program-to-Program Communications and a local-area net running Novell, Inc.'s NetWare. The company will also support interfaces to nets supporting Transmission Control Protocol/Internet Protocol and Manufacturing Automation Protocol.

Netwise is an outgrowth of Wildridge Consulting, Inc., which was formed in January 1986 by former Burroughs Corp. Advanced Systems Division employees when Burroughs cancelled a $35 million project to develop Tools-like software for internal Burroughs use.

"Netwise is going in the same direction toward providing an open network that other vendors like Sun and Apollo are going in, but nobody is really there yet," said David Terrie, editor of "Patricia Seybold's Network Monitor" newsletter and a consultant with New-Port Consulting of Scituate, Mass. "The company has some nice technology, but its market is limited to software development firms."

The modules will be available in the next six months and will cost between $1,500 and $60,000.

Netwise, Inc. is located at 4745 Walnut St., Boulder, Colo., or call (303) 442-8280. ☐

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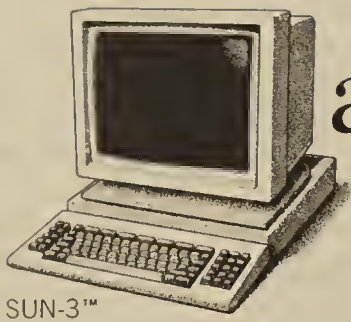
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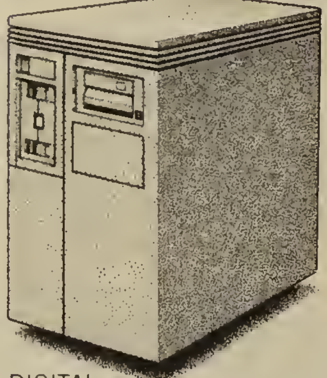
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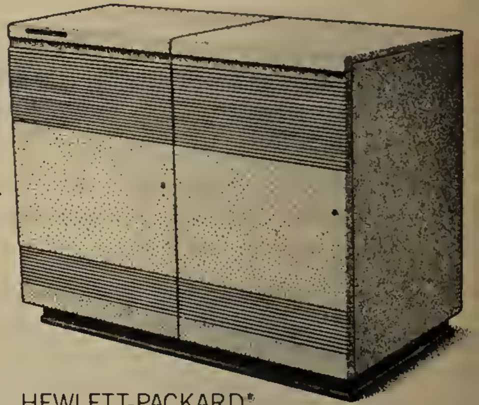
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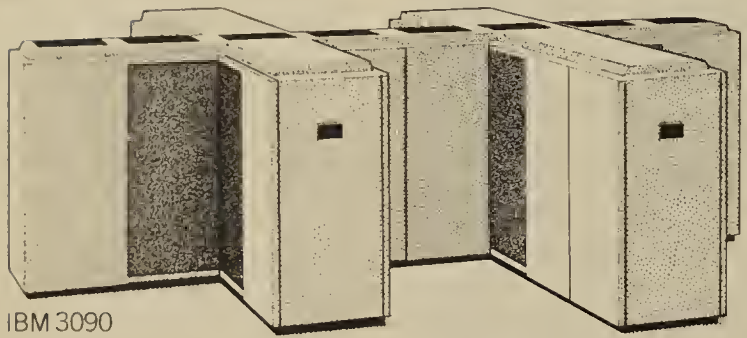
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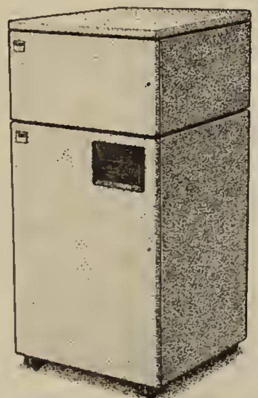
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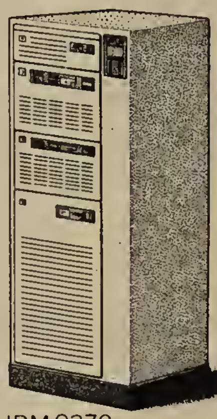
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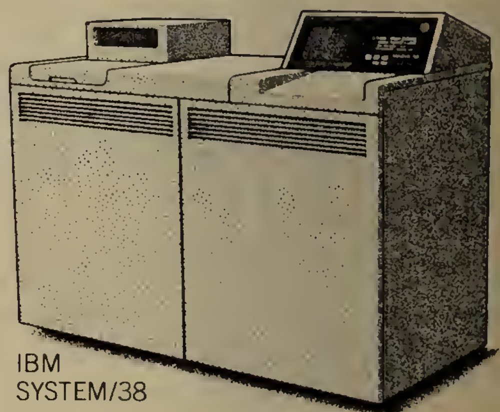
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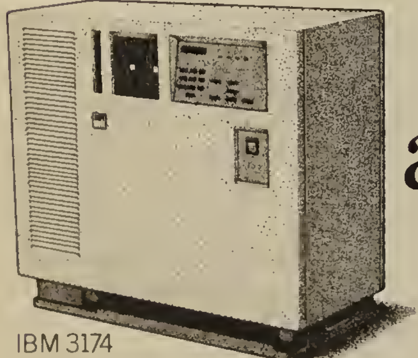
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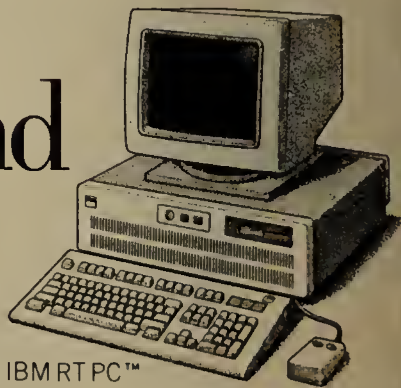
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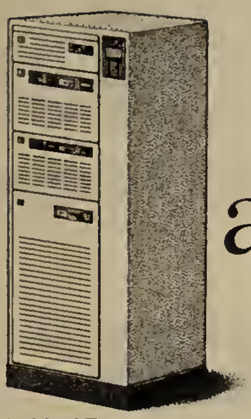
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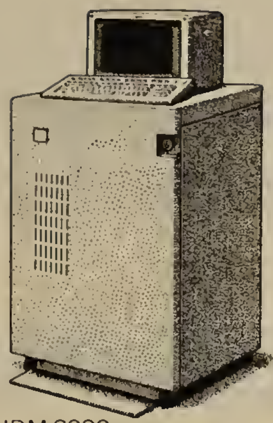
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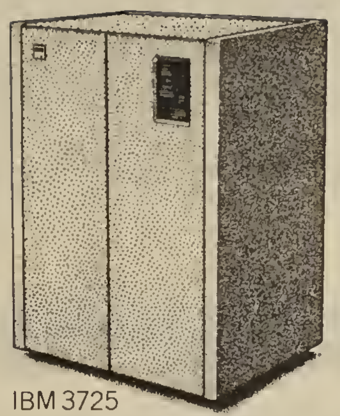
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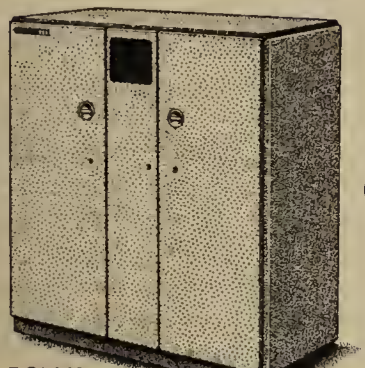
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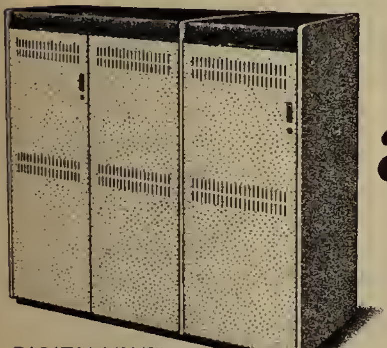
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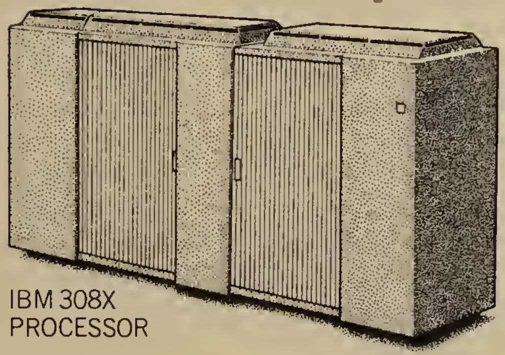
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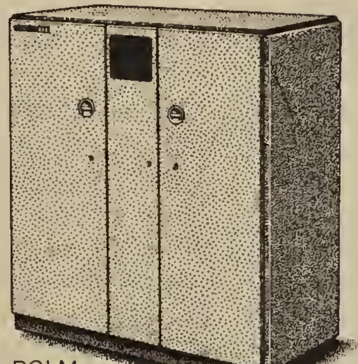
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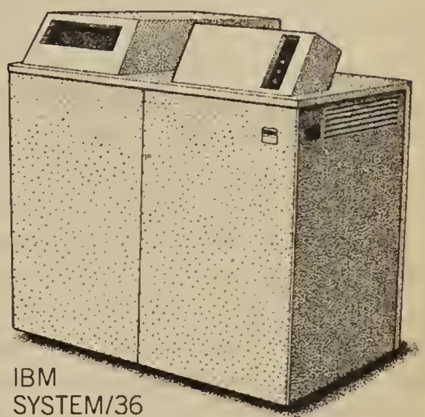
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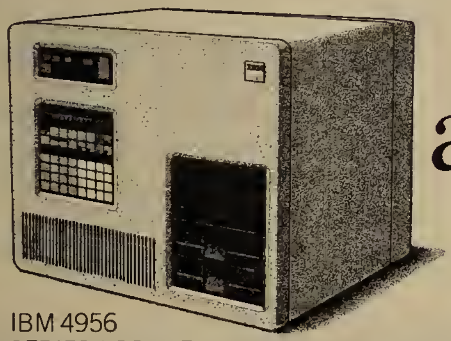
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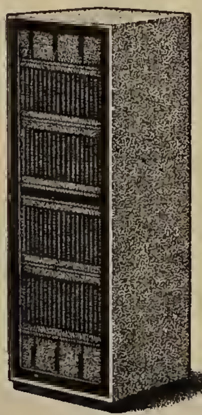
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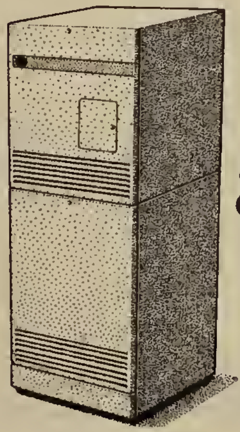
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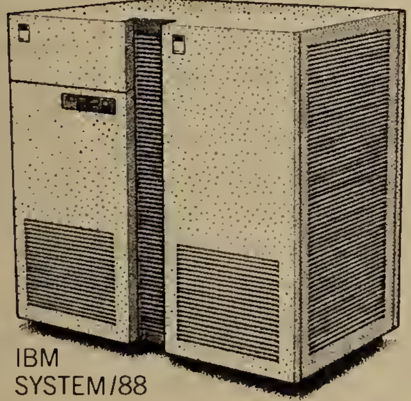
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Some of the connections shown above require additional equipment such as communication controllers, modems or protocol converters.

PRODUCT PROCUREMENT

VICTORIA BLACKFORD

Disinformation abounds

In today's rapidly changing technological environment, many vendors are using questionable marketing practices to sell their products. They're taking advantage of misinformed users that, unfortunately, haven't the time or expertise to perform the in-depth analysis required to make informed decisions on large capital purchases.

The request for proposal process can result in a catch-22 situation, especially if evaluation intervals are short. Learning enough about a sophisticated product to write an intelligent RFP is difficult.

Consequently, the RFP may address only features, without probing the basic architectures of the competing products. The evaluating team, therefore, isn't knowledgeable about the real differences among the competing products. Vendors often promote this situation by using marketing techniques to make their products appear superior.

Comparing product costs is an extraordinarily frustrating task. Without a complete understanding of the product, users have difficulty determining if the quote includes all the equipment and if the vendors have interpreted the RFP configuration correctly.

Some vendors submit low bids to gain an order and then inform the user during the final negotiations that they require additional equipment that wasn't part of the original quote. By then, project timetables are determined, and the user has invested so much that it's no longer practical to switch suppliers. Therefore, users must review the bids in detail to be sure they haven't misinterpreted the RFP or left something out.

Using terms that sound similar to others in common usage is another questionable marketing practice. For example, in the T-1 multiplexer market, the term BEZS (bandwidth efficient zero suppression) can be confused with B8ZS (bipolar eight zero code substitution). Both address 1s density control, which maintains clocking and decreases the level of jitter across a T-1 span.

B8ZS is a CCITT recommendation used to waive the 1s density restriction. If eight 0s are transmitted across a T-1, a sequence of bits with two bipolar violations is substituted and removed at the remote end. BEZS describes a technique that supposedly complies with 1s density; however, the overhead used is much lower than a technically correct compliance would entail.

Another favorite vendor technique is mudslinging: vendors criticizing competitors' products instead of selling the merits of their own. At times, vendors may even use factually incorrect statements. Selling shouldn't be guerrilla warfare but a professional, aboveboard activity. Making intentionally misleading statements is another way vendors confuse users.

Instead of answering a question accurately and directly, the vendor introduces other extraneous problems. Multiplexer delay in voice communications is an example. Delay in excess of 40 milliseconds necessitates echo cancellers. Instead of acknowledging the problem of a long delay in the multiplexer, vendors will discuss other delay sources as reasons for echo cancellers.

Vendors may also create artificial issues to raise confusion. Although these issues are relatively unimportant, vendors use them to differentiate their products. An example is the maximum number of T-1s per node. Since most users' nodes aren't currently handling more than 10 T-1s, discussions of accommodating 62 vs. 94 T-1s are meaningless.

Vendors promote such feature comparisons as being important, when users should compare basic architectural differences.

Vendors may also promise future features and enhancements without distinguishing between existing and future offerings.

Too often, the final version is different from that previously touted, or it never comes to market. Vendor demonstrations may be deceptive, and presentations may include abundant "brochureware."

For example, in the network management arena, net management software may be implemented on personal computers, which have limited capability. The vendor may promise to implement the system on more sophisticated hardware. However, the capabilities of the future system may be nothing more than smoke and mirrors.

Evaluating technical products today is extraordinarily complex. Just understanding the products is difficult enough, and it's complicated by vendors that engage in these questionable marketing practices.

Managers are making decisions based on vendor-supplied information that may be debatable. Since vendors' professionalism is sorely lacking, users should exercise tremendous caution when evaluating products.

Blackford is vice-president of data communications at Chase Manhattan Bank in New York.

TELECOMMUNICATIONS LAW

ALAN PEARCE

Ginsburg's conversion

Although Judges Douglas Ginsburg and Robert Bork will never be together on the U.S. Supreme Court, they're back together on the Circuit Court of Appeals for the District of Columbia, where they'll soon decide vitally important telecommunications policy issues. Ginsburg's past, however, may come back to haunt him in deciding these issues.

The 12-judge court is the second most important in the country, because it rules on key federal issues, including nearly all policy appeals from the Federal Communications Commission.

Both Ginsburg and Bork are leading conservatives on the court, where conservatives hold a seven-to-five majority. In the current term, the two judges are likely to hear appeals against the FCC's Third Computer Inquiry policy, Judge Harold Greene's opinion and order of Sept. 10, which gave the Bell operating companies no relief from the line of business restrictions imposed by the Modified Final Judgment, and a host of other telecommunications issues.

Ginsburg's recent problem with official Washington, D.C. is by no means his first brush with political controversy. He was involved in a major conflict with a leading member of Congress shortly after becoming assistant attorney general for antitrust in the summer of 1985. This wasn't his first stint at the Department of Justice. He was a top aide to Assistant Attorney General for Antitrust William Baxter during the AT&T divestiture in 1984, and then moved from there to the Office of Management and Budget, where he was assistant to Budget Director David Stockman.

When Stockman left for Wall Street, Ginsburg moved back to the Department of Justice, and, after getting into trouble with the House of Representatives, he was nominated as a judge on the Court of Appeals. He has now returned to that position.

Ginsburg's dispute with Congress involved one of Capitol Hill's most powerful and influential politicians, Rep. John Dingell (D-Mich.), chairman of the House Energy and Commerce Committee, which is responsible for telecommunications policy-making and legislative issues.

Dingell wrote to Attorney General Edwin Meese in August 1985, insisting that the BOCs be permitted into the following businesses:

- Information services, except for electronic publishing. Dingell said the BOCs needed the flexibility to upgrade their networks in order to bring new, technologically sophisticated services to the public.
- Equipment manufacturing.
- Inter-local access and transport area telecommunications services.
- Related telecommunications and information services. Dingell argued that, because the BOCs' networks were being bypassed by competitors, including AT&T and cable television companies, generic waivers should be established for new lines of business and that these should apply to all BOCs, as opposed to the case-by-case, company-by-company waiver process in place at that time.

Pearce is president of Information Age Economics, a telecommunications research firm in Washington, D.C.

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Contact Steve Moore, features editor, *Network World*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701, or call (617) 879-0700, ext. 732.

▶TELETOONS — By Phil Frank

He's the model manager. We hope to get a real one in here by the end of next month.
TELE-BLAST CORP.
Phil Frank

In a long, harshly worded and heavily footnoted letter, the Justice Department turned Dingell down flat. The letter was signed by Douglas Ginsburg. One Capitol Hill staffer said, "It was written like a law school paper, and it almost cost Ginsburg his job. Chairman Dingell was very angry."

Dingell was quick to fight back, saying, "The Justice Department has simply dug in its heels, insisting that no waivers or modifications of the bar on information services will even be considered for the foreseeable future. This hardline resistance to change reflects its desire to maintain its institutional prerogative but evidences no new thinking regarding the postdivestiture environment. I do not see how it is in the public interest for an unaccountable, ideologically and bureaucratically motivated government agency to continue to tie up half the telecommunications resources of this country without any public review or opportunity for the public to present its views to the contrary."

Dingell then ordered Ginsburg to appear at a public hearing, where he was grilled intensely. Ginsburg also had to answer about 100 questions in writing. This confrontation, insiders say, changed Ginsburg's attitude toward the BOCs and ultimately led to his so-called conversion. He promptly hired consultant Peter Huber as the Justice Department's consultant. Subsequently, Ginsburg pushed for the lifting of the restrictions.

This controversy was probably part of the reason Ginsburg was anxious to move from the Justice Department to the D.C. Court of Appeals when Meese mentioned that he could get Ginsburg appointed to the court.

Bork and Ginsburg are back on the appeals court where, ironically, they will soon be hearing an appeal on the BOC line-of-business restrictions issue that created a problem for Ginsburg in the past.

The ideas expressed by Dingell in his fight with Ginsburg will certainly be resurrected during the arguments before the court and will also be included in legislation sponsored by Dingell to be introduced in 1988.

All of this tends to prove the old axiom that what goes around, comes around. ◻

EDITORIAL

Keep up with ISDN

At this moment, your competitors may be better prepared than you are for Integrated Services Digital Network.

While that may seem insignificant, given that ISDN won't be generally available for at least a year or more, letting others get a step ahead of you in deploying ISDN may be as devastating as letting your chief competitor install order-entry terminals throughout your client base.

ISDN has been maligned as too futuristic and of questionable usefulness, but it promises a unique marketing opportunity that could be capitalized on by clever, forward-looking companies. The real beauty of ISDN, after all, is not in technical wizardry but in the way it can help businesses change the way they do business.

Companies that recognize the potential of ISDN will be able to use the technology to create new products and services, differentiate existing products, increase revenue, improve customer satisfaction and, in some cases, cut costs.

Sound too good to be true?

Probably, because the coming of age of ISDN represents a rare milestone in the network industry. While many companies have discovered strategic ways to employ network services, no other service has held so much potential for change.

Although the functionality of ISDN could be replicated within a private network — integrating voice and data and extending through the network the signaling and control needed to make the parts work as a whole — ISDN extends these capabilities through the sprawling public network.

That opens many new doors.

For example, a national company that needs to interact with the general populace for order-entry or account information typically supports that application today using automatic call distributors (ACD) scattered across the country. After receiving a call, order entry personnel at computer terminals enter the required information about the caller and set about processing the caller's request, perhaps querying a data base to check on an errant bill.

If the agent can't process the call, it is forwarded to an attendant who can. If the attendant is in a different ACD center, the caller is transferred using trunks usually reserved for evening calling loads between ACD centers.

ISDN could be used in this scenario to ensure that the incoming call is routed to the appropriate agent on the first try. This could be achieved using an ISDN function called automatic number identification, which presents the ACD with the calling party's telephone number.

The ACD, which distributes calls evenly to waiting attendants, could route the caller's number to a data base for identification and then forward the call, along with screen-displayed account information, to an attendant. ISDN could also help to eliminate ACD congestion problems before they occur by working in conjunction with customer premises equipment to examine calling patterns and distribute traffic loads evenly.

Models studied for such a network show that ISDN could improve response time and reduce call abandonment, which translates directly into dollars and cents. AT&T and other carriers are fond of citing such examples to spell out the promise of ISDN, primarily because they know the telemarketing and order entry business inside out.

The potential of ISDN in other applications has to be customer driven. Customers, however, are used to viewing carrier transport services with a utility mentality, using the simple qualification guidelines of availability, reliability and support.

ISDN is not like any other service and shouldn't be thought of in the same terms. ISDN should be planned for in advance and evaluated in terms of its potential for supporting strategic business objectives.

More than that, ISDN should be examined to see if its new technology can be used to *create* new strategic benefits. The opportunities are endless, dependent only on the customer's imagination.

Although ISDN has to mature as a standard and still has to earn its wings, its strategic potential is promising. Acceptance of ISDN may be slow at first, but, after the first pioneers discover ways of using the technology to gain a competitive advantage over their competitors, the laggards will follow suit. ◻

NETWORK WORLD

Features
November 30, 1987

Now you see it . . .

BY MIKE HURWICZ
Special to Network World

"We want to sit down at a microcomputer on a LAN and use resources on micros, minis and mainframes without worrying about where they are or how the communications are established and without having to learn a different user interface for each system," says Bill Lawrence, network engineer at Southern California Edison Co.'s San Onofre Nuclear Generating Station.

"Although we believe program-to-program technologies are the wave of the future," Lawrence continues, "terminal emulation is what's practical for us today."

He's not alone. Every local net user dreams of seamless connections to other local and remote systems, but vendors are only now taking steps toward making that dream a reality. Today, local-area network users are limited to terminal emulation, electronic mail and file transfer when communicating with systems outside their own local nets. What they want is direct, transparent access to a wide variety of geographically distributed resources.

Users want invisible LAN links, but the magic isn't there yet.

Vendors are taking several software-based approaches to providing such access, including host-based servers, program-to-program communications and service protocol gateways.

Most currently available local net-based communications software falls into one of two categories: bridges connecting local networks based on the same operating system and gateways linking local-area nets to host computer systems. In the future, users can expect to see the emergence of gateways that will link local nets based on dissimilar operating systems.

Some local-area network bridge or gateway software products require a dedicated microcomputer, while others do not. Some products can be configured on either dedicated or nondedicated machines, depending on the level of performance the user needs. With the dedicated approach, problems with the server and its software cannot affect other applications and vice versa.

Inter-LAN connections

Much progress has been made recently in local net-to-local net

Continued on page 30

Hurwicz is a freelance writer based in Nashville.

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JUDY

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connections, but, in most cases, the developments haven't been ground-breaking. For example, Banyan Systems, Inc. has announced support for more types of local-area network hardware, and Novell, Inc. recently introduced remote local net bridging for NetWare.

One potential breakthrough in local net-to-local net connectivity is the development of gateways that connect two local-area networks running different local network operating systems. Until now, almost all local net-to-local net connections have linked nets running identical operating systems. The exceptions are the so-called protocol-independent bridges that link networks using the same local-area net data link technology, for example Ethernet, independent of any software.

However, users may still experience hardware compatibility problems, depending on the specific versions of Ethernet to be linked.

One start-up company planning to exploit this opportunity is Technology Atlanta Corp. of Woodstock, Ga., which has announced software products that link dissimilar local-area networks, as well as local-area nets to Unix hosts and minicomputers. The company's president, Andy Miyakawa, says Technology Atlanta products will be compatible with Novell's planned service protocol gateway products, which are expected to be available within the next year and a half.

By translating service requests for one type of server into equivalent service requests for another type of server, Novell's service protocol gateways will allow applications running on dissimilar local-area networks to share access to resources, such as disks and printers. Thus, formerly isolated local-area networks based on Novell's NetWare, Microsoft Corp.'s MS-NET, Apple Computer, Inc.'s AppleTalk and Sun Microsystems, Inc.'s Network File System can be integrated without modifying applications.

Other emerging enhancements for local net-to-local net communications software include high-speed modem support and X.25 connectivity. Banyan's Virtual Networking Software (VINES) and 3Com Corp.'s 3+, for example, support Telebit Corp.'s 14K bit/sec Trailblazer modem. Novell and Banyan offer X.25 bridge products that support transmission speeds up to 64K bit/sec.

The next step may be support for high-speed digital lines such as T-1. According to 10Net Communications, Inc. Executive Vice-President Richard Rebo, the Dayton, Ohio-based firm will offer T-1 bridging for its 10-Net local network operating system. However, the company hasn't made an official announcement yet.

Vitalink Communications Corp., based in Fremont, Calif., already offers T-1 for its high-end TransLAN Ethernet bridges, which are operating-system-independent.

LAN-to-host connections

As with local net-to-local net connections, much of the progress in synchronous and asynchronous local net-to-host gateways so far hasn't been in developing new functionality. Despite emulation of more types of terminals, increases in the number of local network-to-host sessions supported, support for new types of workstations such as Apple's Macintosh II, unbundling of hardware and software and quicker file transfers, users are still limited to terminal-emulation and file-transfer functions.

An important trend in this area is increased support for Transmission Control Protocol/Internet Protocol, the decade-old Department of Defense protocol that has made a surprise comeback in recent years. "Two years ago, if you had asked me about

Continued on page 33

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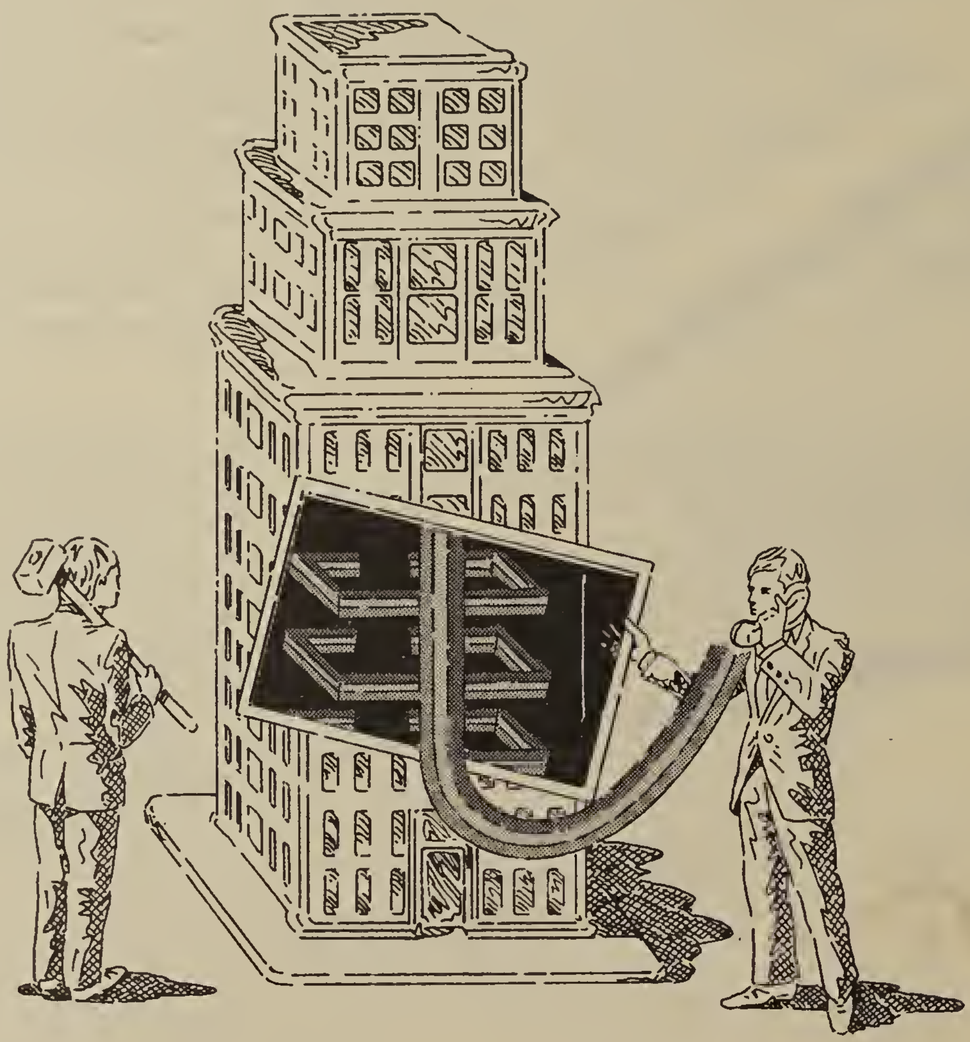

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TCP/IP, I would have said it was on the way out. Today, I see its importance increasing, at least over the next few years," says Charles Chriss, vice-president of marketing and sales for Retix, based in Santa Monica, Calif. Retix develops Open Systems Interconnect (OSI) software for OEMs.

While companies such as Excelan, Inc. and Micom-Interlan, Inc. have already embraced TCP/IP, the major microcomputer local net vendors are just starting to offer TCP/IP products. For example, Banyan's VINES 3.0 features TCP/IP support, both in local net-to-host gateways and server-to-server bridges, and Novell's NetWare 2.1 and 3Com's 3+ both support TCP/IP in their host gateway products. In each case, these features are extra-cost add-ons.

Local-area network vendors are also beginning to offer gateways that provide transparent connectivity between electronic mail systems. For instance, 3Com has introduced a gateway that lets 3+ users exchange E-mail with IBM Professional Office System (PROFS) users. 3+ users address E-mail using 3+Mail, and the gateway automatically converts it to PROFS and routes it to the IBM host.

Novell has announced an E-mail gateway dubbed Mailbridge Server/The Coordinator. Developed by Soft-Switch, Inc., based in Bala Cynwyd, Calif., it allows E-mail exchange between users of Action Technologies, Inc.'s The Coordinator E-mail software and users of other common E-mail packages such as IBM's DISOSS and Digital Equipment Corp.'s All-In-1 (See "NetWare E-mail bridge bows," *NW*, July 20). Novell also offers Message Handling Service software, which offers a programming interface that E-mail vendors can use to link their E-mail systems with the Mailbridge Server. Again, users on all systems retain their native user interfaces.

At some point, local net E-mail gateways based on X.400 will appear, providing an even wider range of interconnectivity. Users could link to All-In-1, DISOSS and many other E-mail applications, as well as to services like Telenet Corp.'s Telemail, MCI Communications Corp.'s MCI Mail and AT&T's AT&T Mail. However, this will require changes to the user interfaces of existing E-mail applications. No major local-area network vendors have made any announcements yet regarding X.400 products.

Host-based servers

Bridges and gateways don't allow personal computer applications to write directly to host disks. Instead, users must store application files on personal computer disks and then transfer the files to the host using a file-transfer utility. This is often a slow and unreliable process. Now, however, host-based local-area network servers are starting to appear that allow personal computer applications to access host disks directly.

There are two ways to implement a host-based server. The first is to put the local net operating system on the host. The second is to run the local net operating system in a gateway machine on the local-area network. No special software would have to run on the host under the second scenario.

An example of the first method is a version of Banyan's VINES that runs on a MicroVAX II under Ultrix, DEC's version of Unix. The VAX is attached directly to the Ethernet network, like any other VINES server. According to Banyan's vice-president of business development, Anand Jagannathan, VINES on the VAX will be commercially available under both VMS and Unix in 1988.

Two such systems are available for AppleTalk users; both use FastPath hardware from Kinetics, Inc., based in Walnut Creek, Calif. FastPath, which is a small stand-alone box with both AppleTalk and Ethernet ports, allows AppleTalk networks to communicate with DEC VAXes on an Ethernet. Pacer Software, Inc., of La Jolla, Calif., has used FastPath as a platform for developing AppleShare file server software that runs on a VAX under VMS. Pacer's is the only system discussed here that allows AppleTalk and VAX users access to the same text files without transferring them to a different part of the disk or converting them to a new format.

AlisaTalk, from Pasadena, Calif.-based Alisa Systems, Inc., acts as a virtual local-area network on the VAX, not just as a server. This unusual architecture allows connections to DECnet nodes and other AppleTalk networks, using the VAX as a hub. Connection to remote AppleTalk nets requires the Interbridge product from Hayes Microcomputer Products, Inc. or an equivalent product.

Mainframes can be used as local-area network servers, too. For example, Montreal-based Micro Tempus, Inc. offers Network Basic I/O System-based Tempus-Share software. In conjunction with an Irma or other micro-to-host card, it allows local net workstations to share files on a portion of an IBM mainframe disk. Tempus-Share in-

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cludes personal computer software, which runs on MS-NET-compatible networks under DOS 3.1, and mainframe software, which requires MVS/VTAM.

Tempus-Share supports only the MS-NET file, directory and record management calls. It does not support print spooling or messaging.

The second method of implementing a host-based server was demonstrated by 3Com and 10Net Communications at the recent Comdex/Fall'87 show. They showed host-based servers using the Network Coprocessor (NCP) from Virtual Microsystems, Inc. of Berkeley, Calif. With this system, the local network operating system doesn't run on the VAX but in a separate NCP box that communicates with the VAX. The advantage of this architecture, according to William Thomasmeyer, vice-president of marketing for Virtual Microsystems, is that the local net operating system doesn't compete with VAX processes for CPU time. However, competing vendors emphasize the robustness of the VAX environment.

The advantages of host-based servers typically include access to fast, high-capacity disks, good physical security and centralized software control and backup, along with retention of the user interface (the microcomputer) and the power of the local-area network.

Typically, local network users can't share data with host terminal users. Instead, each set of users has its dedicated area of the disk, and a special utility is required to transfer a file from one area of the disk to another, converting the file format in the process. The Pacer system is an exception to this rule.

E-mail systems don't interact either, so a local net user can't send E-mail to a terminal user and vice versa. Typically, the host networking system isn't available to the host-based server. So, for example, local network users with a VAX-based server can't access other VAXes connected to the server by DECnet. An exception to this is AlisaTalk. Developers are working to overcome most of these limitations.

Host-based servers may be the wave of the future for large IBM clients whose MIS systems have long been host-centered, according to J. Scott Haugdahl, senior communications engineer with Architecture Technology Corp., a Minneapolis-based data communications consulting firm.

Haugdahl says IBM's Systems Application Architecture (SAA) and Enhanced Connectivity Facilities may encourage some large users to set up local-area networks in which the only server software runs on mainframes and minicomputers. Software on local-area net workstations would simply make requests.

However, implementing this strategy may require IBM's new local network product, due to appear in November 1988. Michael Goulde, senior analyst with The Yankee Group, a Boston-based consulting firm, points out that IBM's offerings will be fledgling products when they first appear. Goulde says many users may still prefer mature products from vendors such as Novell and Banyan.

> Apple's Gursharan Sidhu says Microsoft's OS/2 will not threaten Apple's status in networking.

This is especially true since it doesn't look like a new standard local network operating system will emerge to confront currently dominant vendors like Novell. At one time, industry observers thought Microsoft's OS/2 LAN Manager might become the dominant local network operating system, especially if IBM got behind it. However, IBM announcements at Comdex/Fall'87 indicate that IBM will be using only selected portions of the LAN Manager, while adding capabilities of its own, including a Communications Manager. This is essentially a repeat of IBM's performance with MS-NET — a performance that doomed that operating system to second- or third-place status in the local-area network world.

Gursharan Sidhu, Apple's manager of network systems development, says OS/2 will not threaten Apple's status in networking, either. He says some analysts compare predicted OS/2 networking functions with the functionality of today's AppleTalk and predict that many of Apple's comparative advantages (iconic interface, multitasking, resource management included in the operating system and so on) will be greatly reduced when OS/2 appears.

"They are assuming that we're standing still," says Sidhu, "We are not standing still."

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due to ship in July 1988, will be the first SAA environment. However, local-area network support will not be available in IBM's OS/2 until November 1988, when the company's OS/2 Extended Edition 1.1 ships.

> Overall, OSI isn't yet an important factor in local-area network gateways and bridges.

Where is OSI?

The OSI model sponsored by the International Standards Organization (ISO) garners many headlines these days. What role does OSI play in the development of local network communications software? Ultimately, OSI may provide the kind of seamless integration users seek. In its initial implementations, however, it will provide terminal emulation, file transfer and electronic mail — the same basic functions provided today by TCP/IP.

Retix's Chriss emphasizes that OSI will improve on TCP/IP, however, not only because it will offer increased interoperability and a wider choice of hardware platforms but because OSI applications are better than their TCP/IP counterparts. "Many of the same people who developed TCP/IP are now working on OSI," he points out. "They've learned a lot in the interim."

Overall, however, OSI isn't yet an important factor in local-area network gateways and bridges. Novell, the dominant microcomputer local network vendor, is waiting until OSI becomes popular to support it, according to Mark Calkins, vice-president of marketing for the company's NetWare Products Division.

Nevertheless, there is some OSI support on local networks, and more is coming. Ungermann-Bass, Inc. has been supporting the Manufacturing Automation Protocol in its local-area networks since 1985 and is now testing an implementation of MAP 2.1.

Retix supplies a tool kit that can be used to build OSI gateways, and at least three local net vendors have OSI-based local network software, which they sell under OEM agreements with Retix. Western Digital Corp. of Irvine, Calif., has been supplying OSI-based NETBIOS software for about a year. According to 10Net Communications' Rebo, the next release of 10-Net will include OSI-based NETBIOS software. And Micom-Interlan Product Marketing Director Bruce Macaloney says his company has OSI-based local-area network software running in eight beta sites today, but it is "waiting for market demand to emerge" before announcing a product.

Another OSI local network product that's available now is the Communications Server/1-OSI, from Bridge Communications, Inc. of Mountain View, Calif. The CS/1-OSI connects up to 64 devices — such as personal computers, printers, terminals, host ports and modems — over a local network to one or more OSI-compatible hosts. Bridge is committed to updating the software as OSI protocols firm up, according to Bridge General Manager Judy Estrin.

However, since few OSI hosts exist today, Bridge currently ships most of its CS/1s with TCP/IP software that can later be upgraded easily to OSI.

Banyan's Larry Floryan, director of system design, has stated that Banyan will replace its proprietary protocols at the network layer with OSI protocols ("LAN vendors vary in support of ISO," *NW*, Aug. 24). And 3Com will support MAP/TOP 3.0 in 3+Open, due out in the first half of 1988. So OSI support is coming, but it's not giving users any additional functionality yet.

Program-to-program utility?

A recent Communications Solutions, Inc. report shows that use of IBM's Advanced Program-to-Program Communications is increasing, but mostly for communications between CICS systems. Only about 20% of communications managers interviewed were using APPC on a microcomputer ("LU 6.2 use accelerates," *NW*, Nov. 2). Local network gateways for program-to-program communications are still a thing of the future.

Vendors of local net communications products speak bravely about giving users the most convenient connections possible to the widest variety of networks, computers and other devices. However, many local network vendors are waiting for market demand to develop before supporting emerging standard protocols like APPC and OSI. They will widen the circle of protocols they support only as a broad segment of their customer base demands that support. ◘

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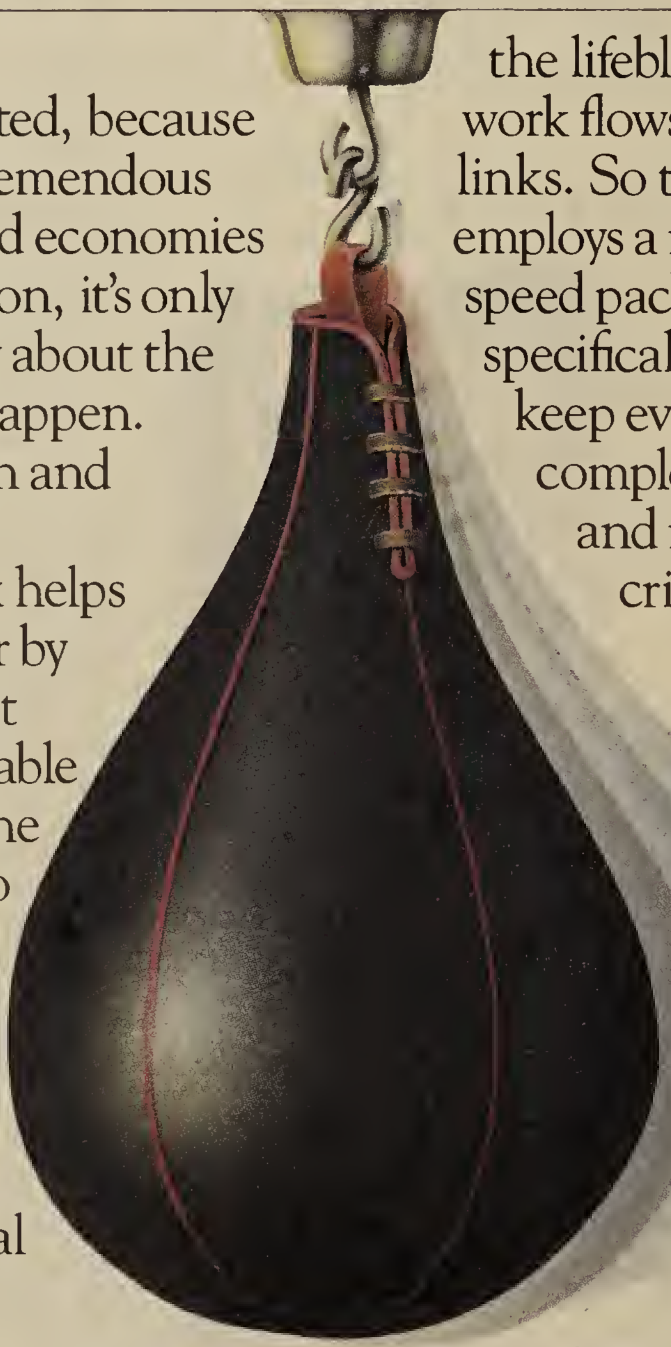

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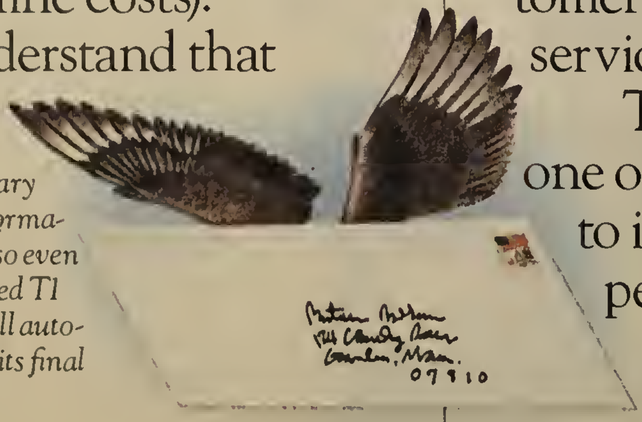

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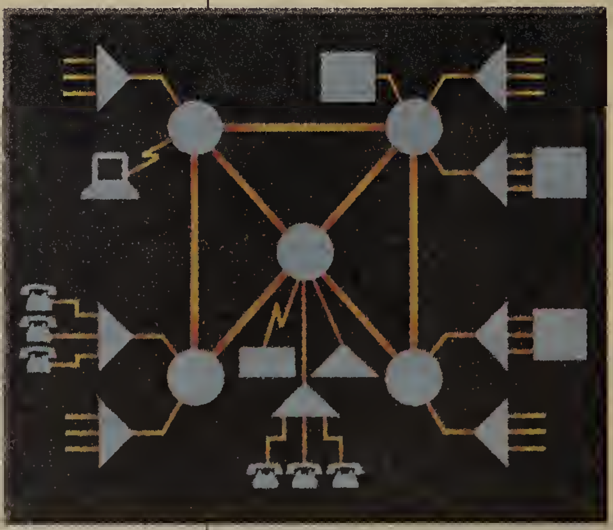

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Special Section: Communications software

It's not done with mirrors

From dial-up links to expert network management systems, software makes the magic in communications.

Continued from page 1

This special Network World *report presents insights from prominent consultants, vendors and users about the current state and future promise of communications software.*

Internetworking software

James G. Herman, telecommunications consultant, Cambridge, Mass. — One of the things everybody wants right now is a bridge or router that can link local-area networks together at speeds up to and including T-1. We're beginning to see products that claim to be able to attach LANs over T-1 circuits, and they're relatively cheap. This is a hot area at the moment.

I don't see bridges evolving into routers and gateways. Bridges are good in that they're simple. It's not a bad thing that they're simple, as long as your need is simple. That means they're cheaper and faster. On a similar hardware base, a bridge could do 100 packets per second, a router could do 10, and a real gateway that translates between protocols could do only one packet per second. The simpler you can make the problem, the better the performance and the cheaper the hardware base.

Protocol translation, routing and congestion control are communications protocol problems. Solutions can be implemented using what are becoming standard techniques for development of communications systems — finite-state machine programming and things like that.

The problem is that users are trying to take a very fast thing, like a 10M bit/sec local network, and connect it to something intrinsically slower, such as a wide-area network.

That speed mismatch creates some difficult software engineering problems. This makes the interconnecting of local networks a very difficult but interesting problem.

Tom Beck, director of telecommunications, Texaco, Inc., Houston — Right now, we have an IBM local-area network, using SNA; we also have DECnet and Ethernet networks. We're working on bridging those. The key [to not bridging the networks previously] is that all the products haven't been there to allow us the functionality that we want between LANs. The products are still not quite there; we might be able to connect the LANs, but there might not be any transfer of information between the two.

L. David Passmore, principal, Network Strategies, Inc., Fairfax, Va. — There are a lot of different ways to link WANs into LANs. If all you have is a bridging approach, there are trans-LAN bridges that support point-to-point links between LANs or can utilize the services of an X.25 packet network. The virtual circuit established looks like a point-to-point link between the LANs. One of the problems with that approach is that all devices have to be on some kind of LAN. You can't use it to talk to an X.25-attached host because the host itself would need to be on a LAN. Because

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> "In selecting software, you should look for things like throughput. What kind of performance will the vendor guarantee to provide in terms of frames or packets per second?"

the bridges are designed to go from a LAN to a LAN, if you have a host that's connected to the packet-switching network that's not on a LAN, it couldn't communicate. It would be communicating at Level 3 instead of at Level 2. With a router, you're not restricting yourself. You can talk to hosts connected directly to the packet network or one that's connected to a LAN.

Probably the most important consideration is whether or not you have a multivendor environment. Do you have one vendor, such as IBM or DEC, or have you committed yourself to something like TCP/IP? If you're in one vendor's environment already, you're probably going to want to go with a router. Whereas, if you're in a multivendor environment and you want to have one or more of your LANs and WANs support multiple vendor products, then you're going to go with a bridge. A gateway restricts you the most, because it's between two very specific environments. But when you start getting into routers and gateways, you get better management and control because you can use a single-vendor system that can look at all devices. With bridges, your functionality is restricted.

In selecting software, you should look for things like throughput. What kind of performance will the vendor guarantee to provide in terms of frames or packets per second? If you've got a lot of traffic that needs to cross the router, bridge or gateway, that's important.

Mike Quinn, telecommunications staff consultant, Primerica Corp., Byram, Conn. — We have an IBM Network using the IBM cabling scheme with IBM PCs, PS/2s, Compaq [Computer Corp.] 386s. We have almost 220 devices on the network right now, and we have gateways to our host system. Our IBM PC LAN is bridged to it. We're looking into bringing up a wide-area network bridge to one of our subsidiaries in New York.

Today, you can't mix and match your local-area network software. We just put in the IBM bridge software and got two separate local-area networks to work, but we were unable to get two Novell NetWare servers to speak to each other. We're researching that now with Novell and IBM.

We've run into this problem before, in trying to get an SNA gateway to work. There's no real compatibility across the different vendors. Everybody talks about open networks, but it would be nice to have that at every level. Let's say we were going to use Novell's NetWare, but IBM has a product that fits our needs better than Novell's software. I'd prefer to pick up the pieces that fit our situation best and have a multivendor environment.

Miles Fidelman, senior consultant, BBN Telecommunications Consulting Group, Cambridge, Mass. — The critical issue is gateway support. The internetwork protocol is what ties networks together into gateways, and [Internet Protocol] is the current protocol for that. The [International Standards Organization's] equivalent is the connectionless network service known as ISO IP. Chances are, by 1990, most gateways will support both versions of IP; if you support only one, you'll be able to talk only to that subset of the world. It's no big deal to run multiple suites on the host computer.

Gary Kwok, manager of project consulting, Lanquest Group, Santa Clara, Calif. — Linking LANs is often done through asynchronous file servers out to the host. It's certainly quick and inexpensive; it's probably the easiest short-term solution right now. The problem is the speed of asynch communications. I would look for people to provide faster gateways out to the host, if that's important to users. We'd like to see faster communications for internetworking.

Dial-up communications software

Beck — We're predominantly using Crosstalk for our PCs to communicate with other PCs, with hosts and with asynchronous devices as well. Typically, people working from home are using Crosstalk to communicate with the

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host; they go through one of our protocol converters so they can get full-screen access from their home. There are some problems doing the types of file transfer that we'd like to do with the dial-up system.

A dial-up package is a dial-up package. You're either going to have problems with it or not. Users might want to look at three or four different packages. To me, they're all going to be pretty close to the same.

> "The best way to shop for dial-up software is to find whatever will handle the most protocols at the best price. That's basically it."

Gary Betty, vice-president, Hayes Microcomputer Products, Inc., Norcross, Ga. — New communications software packages have added a great deal of ease of use by including scripting languages and multisession capability. Through scripts, people can access and display information in a format they understand without having to understand what they did to get it.

Scripts are more than macros. A macro allows you to automate steps to log on to a computer, retrieve information and come off line. A script can actually change the human interface to the program.

We've written scripts to the front end of CompuServe, [Inc.], so instead of seeing non-user-friendly screens, you can get something that displays very easily in a form people can truly understand.

Multisession capability can be both a software and hardware function. There are two types of multisession capability. There's the ability for the communications software package to have two simultaneous sessions running on different communications ports. The other is where multiple sessions go over a single physical connection.

So, if you have a modem and can directly connect into a VAX, you can be into CompuServe or Dow Jones [Information Services Group's News/Retrieval Service] or whatever and can also be directly connected into the VAX via your personal computer.

A facility associated with X.25 allows a user to have multiple sessions via a single connection. In that situation, it's a software solution, whereby you partition the channel using software. A program like that is Tymnet, [McDonnell Douglas Network Systems Co.'s] X.PC.

With multisession over a single connection — if the connection has a large enough bandwidth — you can use that on a dedicated or a dial-up basis very effectively.

For example, if you have an ISDN connection to a remote IBM mainframe via ISDN, and you're connected to a Token-Ring, you might partition that ISDN channel to allow multiple users access to various portions of the bandwidth of that channel at the same time, without establishing other connections. The ISDN channels are high enough in bandwidth to give users satisfactory performance.

If you have a 1,200 bit/sec channel, that's not a lot of bandwidth to share with other people.

Fidelman — The best way to shop for dial-up software is to find whatever will handle the most protocols at the best price. That's basically it. Find software that supports Kermit and Xmodem, and you're covered.

There are two different flavors of micro-to-mainframe: There's micro to real mainframe, where what you're really talking about is 3270 emulation with a synchronous modem; that's very different from dialing into a VAX, for example. There, you're talking terminal emulation and file transfer.

> "No technology can go very far if you can't manage it. You have to be able to configure it easily, to monitor problems on an end-to-end basis."

Electronic mail software

Jesper Mackeprang, manager of user computing services, Primerica — Our first step into E-mail has been running Consumer's Software, Inc.'s Network Courier on our large Token-Ring Network. One of the things that we're looking for is an interface with MCI Mail, so we can extend our base to incorporate all of our subsidiaries.

We just incorporated one of our major subsidiaries that also has a Token-Ring in place and made it a logical extension to our network to allow it to share the same E-mail. That's being done with a remote bridge, which is a synchronous link between our token ring and its token ring. It acts as if we're on one large ring. It's just a little bit slower to copy data to the other ring.

Kwok — E-mail is one way users can do file transfer; just send the message with the file as an enclosure. Even on a local system, E-mail is not so much for passing letters as it is for message taking and file transfer. The range of choices for E-mail on PC LANs isn't that big; that decision is usually made when the network is purchased. I think it's part of the overall LAN purchase decision.

Betty — Today, most E-mail in an organization is done internally because there's no way for someone who subscribes to MCI to talk to a subscriber of Western Union's Easylink. With X.400, all of these will have a unique address, and you will be able to send and receive information from any service. We could have X.400 E-mail capabilities as a module in future software packages. It would be a generic application that would dial into any E-mail service provider. I don't know if we're going to do it, but it's a possibility. However, it's complex. X.400 software is not trivial at all.

Network management software

Beck — We've got NetView and NetView/PC, and we're looking to them as part of our strategy. But we're certainly open, and if something else comes up that's more appropriate, we'd certainly change that strategy. We would like the ability to have centralized network management. In addition, we'd like that net management capability to be in the remote sites as much as they need it. We want the flexibility of having it where we want it. IBM is saying that NetView will allow that; it's not there today.

Dave McCrabb, communications product manager, Apollo Computer, Inc., Chelmsford, Mass. — There's very little network management software out there right now for multivendor environments. We have a set of rather disparate network management tools, and we're looking at integrating them and making one large integrated tool for Apollo systems, no matter where they exist — on token rings, Ethernets or other types of nets. The lack of integrated network managers is largely due to the complexity of the problem, and the problem is complex primarily because there's not a lot of standardization.

> "There certainly isn't [any software] for multivendor network management. A logical product would be a DEC-IBM manager."

There's talk of using expert systems and decision support systems in net managers, especially in fault management and even performance management. The management application would not only measure and detect possible failure but, based on the measurements, be able to tell the operators what to do, how to determine if their actions are having any effect and what further actions to take.

Herman — It doesn't matter what the software does, but it has to be manageable. No technology can go very far if you can't manage it. You have to be able to configure it easily, to monitor and troubleshoot problems on an end-to-end basis and to trace things through all the different levels of protocols.

Network management is one of the things that's going to hold back the use of international standards and give vendors' proprietary approaches a longer life. ISO has been late in standardizing network management. In an IBM or DECnet world, you can manage all aspects of your network.

One of the problems that third-party communications software providers are going to have to answer is, "How is that software going to fit in with the way the networks are going to be managed?" A lot of vendors are being forced to provide some sort of link to existing management capabilities.

Passmore — With regard to network management, what hooks are provided within the communications software product that will work with one or more of the vendors' network management control systems, so you can figure out, for example, on which side of the router the problem is located?

Ease of use and configuration are other things to look for. How much configuration is required? Do the routers and bridges learn about each other automatically through the network, or do you have to set up a lot of tables? How much effort is required to define to each of these products where devices are located? And if you add a workstation to the network, how much definitional effort is required to update the tables?

In some cases they're self-configuring — they learn from each other. In other cases, each one has to be told manually.

Kwok — Network management is becoming a very important issue. Outside of IBM and DEC and maybe a couple of others, there's not much [software available]. There certainly isn't anything for multivendor network management. A logical product would be a DEC-IBM manager.

Standard protocols

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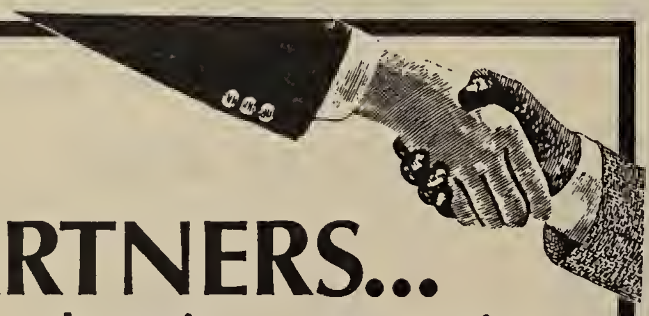

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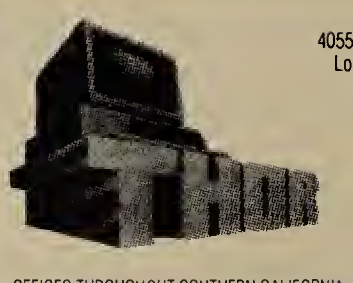

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EDI users await X.12 boost

continued from page 2

"Only recently has a concerted effort been made to standardize the formats for common business transactions such as purchase order, invoice and request for quotation," Bielfeldt said. In addition to those applications, Navistar uses EDI for advanced shipping notice, remittance advice and material release.

Conversion requires purchase of an off-the-shelf translation program, Bielfeldt said. To use the program, users must define what the proprietary format looks like, and the program automatically converts it to the X.12 format.

The benefits of the X.12 standard will be seen in the expansion of EDI applications and improved communications with suppliers, Bielfeldt said. "If we want to expand our use of EDI, then it will be beneficial to be in line with what everybody else is doing, and everybody else is working toward ANSI. When everybody else uses ANSI, the supplier base as a whole will be able to respond to our needs more readily and economically. Also, the ANSI format will lend itself to expanded use of electronic communications without a lot of effort on either trading partner's part."

Bielfeldt declined to say whether Navistar will join the international X.12 users group, saying more time is needed to decide.

General Electric Co. has been using EDI since 1974, "before they even had a term called EDI," according to John Shortsleeve, manager of cash operations. Because EDI is used for different applications in a cross section of the company's widely diversified business units, its benefits vary somewhat, Shortsleeve said. But they always include greater accuracy, tighter inventory control and generally superior communications with customers and suppliers.

General Electric has used EDI with both suppliers and customers but has restricted it to large accounts. "A lot of EDI involvement has been in the areas of major customers and vendors. That's where the money is," Shortsleeve said.

"It seems that you get better acceptance [of EDI methods] with those companies that have large settlements. We're looking at large-volume customers with very complicated invoicing."

EDI applications at General Electric include order entry, drafting of receivables, inventory control and various methods of receipt and disbursement.

While the company is implementing X.12 on many of those applications, it may preserve proprietary formats in some situations. "Because General Electric has diversified businesses, we try to be as standard as possible and go with a limited format such as ANSI X.12," Shortsleeve said. "But the bottom line is, what's good for one of our customers may not necessarily be good for another customer. So we seek flexibility." ◻

Standards writing clears hurdles

continued from page 16

Thomas, vice-chairman of the committee.

Thomas, who is a senior software engineer at Communications Machinery Corp., said the committee hopes to get as much input and support as possible for the specification. All comments will be considered at the subcommittee's next meeting in December in Arizona. The specification will then be submitted to the entire MAP/TOP group for inclusion in Version 3.0 of the TOP specification.

Although an initial version of the TOP 3.0 specification is available to developers now, Thomas said he expects a formal version to become available at the time of the MAP/TOP Enterprise Networking Event in June. Products implementing the specification are expected to be available at the event.

Finally, the fledgling Network Computing Forum (NCF) began considering a proposal last week at its semi-annual meeting in San Jose, Calif., to specify a common approach to implementing how one networked computer requests another to perform a computing task.

Such a function, dubbed a remote procedure call (RPC), provides a foundation for developing applications that can be executed in a variety of vendors' computers attached to the same network. Each computer and networking vendor now has its own approach to implementing RPCs. "This is a major barrier to interoperability," said John Robotham, managing director of NCF.

The draft proposal, presented by the core network services committee of NCF, is expected to be adopted by NCF at its next meeting in May. The informal group, formed last March to promote the development of standards that allow computing resources to be shared in a network, hopes to submit its work to an appropriate standards-making body — most likely the American National Standards Institute.

The group, which began with 31 members from the vendor and user communities, now numbers 107. ◻

CALENDAR

Dec. 3-4, Boston — Systems Application Architecture. Contact: Gen2 Ventures, Suite D-5, 12930 Saratoga Ave., Saratoga, Calif. 95070.

Dec. 7-9, Washington, D.C. — The National Connectivity Symposium on Local-Area Networks and Micro-Mainframe Links. Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810.

Dec. 8-9, New York — Communications Opportunities Strategy Conference. Contact: Quantum Consultants, Inc., 114 Avenue of the Americas, New York, N.Y. 10036.

Dec. 8-9, Boston — Networking the IBM PC, XT, AT and Compatibles. Also Jan. 14-15, Seattle. Contact: Data-Tech Institute, Lakeview Plaza, P.O. Box 2429, Clifton, N.J. 07015.

Dec. 9-10, New York — ISDN Applications and Market Forecast. Contact: Eastern Management Group, 4 Century Drive, Parsippany, N.J. 07054.

Dec. 9-10, Washington, D.C. — Central Office Switching: New Technologies and Network Applications. Contact: Phillips Publishing, Inc., 7811 Montrose Road, Potomac, Md. 20854.

Dec. 9-11, Los Angeles — Sixth Annual Large Systems Conference. Contact: Gartner Group, Inc., P.O. Box 10212, 56 Top Gallant Road, Stamford, Conn. 06904.

Dec. 14-16, Washington, D.C. — The New Standards: OSI and ISDN. Contact: Technology Transfer Institute, 741 Tenth St., Santa Monica, Calif. 90402.

Dec. 14-18, Washington, D.C. — Introduction to Digital Telephony. Contact: Continuing Engineering Education Program, George Washington University, Washington, D.C. 20052.

Jan. 6-8, Baltimore — Hands-On SNA. Contact: Datacomm Group, American Institute, Inc., 55 Main St., Madison, N.J. 07940.

Jan. 11-15, Irvine, Calif. — ISDN Week. Contact: Teledimensions Systems Corp., 21552 Shillingsburg Ave., San Jose, Calif. 95120.

Jan. 18-21, Tampa, Fla. — 16th Annual BICSI Conference. Telecommunications Distribution Design in Buildings. Contact: BICSI, University of South Florida, LLL 012, Tampa, Fla. 33620.

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